MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for March, 1900, is based on reports from about 3,103 stations furnished by employees and voluntary observers, classified as follows: regular stations of the Weather Bureau, 158; West Indian service stations, 12; special river stations, 132; special rainfall stations, 48; voluntary observers of the Weather Bureau, 2,562; Army post hospital reports, 27; United States Life-Saving Service, 9; Southern Pacific Railway Company, 96; Canadian Meteorological Service, 32; Mexican Telegraph Service, 20; Mexican voluntary stations, 7; Mexican Telegraph Company, 3. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Meteorologist to the Hawaiian Government Survey, Honolulu; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Señor A. M. Chaves, Director-General of Mexican Telegraphs; Mr. Maxwell Hall, Government Meteorologist, Kingston, Jamaica; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; and Capt. J. E. Craig, Hydrographer, United States Navy.

The REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local meridian is mentioned.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

The heavy snowstorm of February 28 in the interior of New York and over the lower Lake region continued during March 1 and extended over central and northern New England. Timely warnings of this storm proved of great value to the public. The second heavy and general snowstorm of the month visited the Great Lakes on the 4th and 5th. This storm resulted in a partial blockade of railroads in Wisconsin and Michigan. All transportation lines had, however, been warned of its approach and prepared for the emergency. In northern Illinois and northern Indiana heavy snow, sleet, and rain seriously interfered with traffic. On the 15th heavy snow fell in the Middle Atlantic and New England States and the upper Ohio Valley, and light snow in the interior of the Gulf and South Atlantic States. All interests in the Middle Atlantic and New England States were notified the morning of the 15th that heavy snow and increasing northeast winds were indicated for the afternoon and night of that date from the upper Ohio Valley over the Middle Atlantic and south New England States and the lower Lake region. On the 5th snow fell to a depth of 3 to 5 inches at Salt Lake City, Utah. During the 14th heavy snow was reported in northern New Mexico. On the 19th snow fell in the mountains of southern California.

On March 1 severe gales prevailed along the Middle Atlantic and south New England coasts, and on the 2d easterly gales, high tides, and heavy rain caused considerable damage on the Maine coast. High winds attended the snowstorm of the 15th in the Atlantic coast States. Heavy gales, the severest of the season, prevailed on the north Pacific coast during the afternoon and night of the 7th.

The Atlantic coast storm of the 1st and 2d was followed by a marked fall in temperature in the South Atlantic and Gulf States during the night of the 1st, and on the morning of the 2d heavy frost occurred at Mobile, Ala., light frost at New Orleans, La., and Jacksonville, Fla., and killing frost in the interior of the middle and east Gulf and South Atlantic States. The heavy snow in the Lake region on the 4th and 5th was followed by a cold wave and high winds in that section. Light and heavy frost occurred in southern California on the 6th and 7th. During the 15th and 16th a cold wave swept east and southeast over the Great Lakes, and killing frost again occurred in the South Atlantic and the interior of the east Gulf States on the morning of the 17th, with light frost as far south as Jacksonville, Fla. Warnings of frost in the north Pacific coast States were issued on the 12th, 13th, 20th, and 27th, all of which were justified. Frost occurred in the east Gulf States on the 31st. Warnings of the cold waves and frosts of the month were given the widest possible distribution in the threatened districts. In the Central and Northern States vegetation was not sufficiently advanced to suffer injury from cold. In the Southern States, and especially in Alabama, the frost warning of the 31st saved a large portion of the strawberry crop.

During the early days of March flood conditions prevailed in the Hudson River and tributaries, and on the 13th the water was high in the rivers of Illinois.

CHICAGO FORECAST DISTRICT.

The storm which first appeared on the north Pacific coast March 2 moved southeastward across the middle Rockies, and thence northeastward to the upper Lake region, reaching the latter section on the 6th. Its influence was widespread in the shape of snow and high winds in the greater portion of the district, and it was followed by colder weather except in the Rocky Mountain region. Forecasts and warnings well in advance of the storm's movement were issued.

Ample warnings were given of high winds and cold weather which prevailed in the Lake region on the 18th and 19th.

A storm which developed in the Rocky Mountain region on the 26th moved eastward across the Middle States during the following three days. It was accompanied by rain and snow and the warnings issued in advance of its approach were timely.—*H. J. Cox, Professor.*

SAN FRANCISCO FORECAST DISTRICT.

The month as a whole was remarkably free from storms. On the few dates when frost appeared it was successfully forecast. Almond trees in bloom experienced no damage from frost for the first time in five years during the month of March.—*A. G. McAdie, Forecast Official.*

PORTLAND, OREG., FORECAST DISTRICT.

On the morning of the 7th southwest storm signals were ordered at all stations on the coast, strait, and sound, and heavy rainfall and heavy gales occurred during the afternoon and night over the whole district. At Portland the storm was the severest of the winter, and was one of the worst ever experienced at that place. No damage to shipping was reported. Frost warnings were sent out on a number of dates and all were verified. The success of the frost warnings has been favorably commented upon.—*G. N. Salisbury, Acting Forecast Official.*

HAVANA FORECAST DISTRICT.

No severe storms occurred in the district during the month. Warnings were issued on a number of dates of falling temperature and high winds, and in a number of instances vessel masters were furnished information regarding wind direction and force.—*W. B. Stockman, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

During the month of March, 1900, there were twelve highs and thirteen lows which could be charted. (See Charts Nos. I and II.) A brief description of some of their characteristics is given herewith.

Highs.—All but Nos. III, V, VII, and VIII were first observed in the British Northwest Territory. Nos. I, IX, and XI moved almost due southeastward to the south Atlantic coast. No. II, after moving southeastward to the middle Mississippi Valley, turned east-northeastward and disappeared off the southern New England coast. Nos. IV and VI moved almost due eastward, the former dissipating in Ontario; the latter, after reaching Ontario, sent an offshoot to the southward, which disappeared off the southern North Carolina coast, the principal crest continuing eastward through New Brunswick. Nos. X and XII disappeared before reaching the Atlantic States. No. III originated over northern Lake Superior and moved due eastward to the Atlantic Ocean. No. V moved in an irregular parabolic course from the south Pacific coast to the middle Plateau. No. VII originated on the north California coast, moved northward to British Columbia, and thence eastward to the Saskatchewan Valley, where it remained stationary for three days, with steadily decreasing intensity, practically disappearing at the end of the third day. No. VIII moved over the southern portions of the Gulf States, and thence northeastward off the North Carolina coast.

Movements of centers of areas of high and low pressure.

Number.	First observed. Date.	First observed. Lat. N.	First observed. Long. W.	Last observed. Date.	Last observed. Lat. N.	Last observed. Long W.	Path. Length.	Path. Duration.	Average velocities. Daily.	Average velocities. Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	1, a. m.	53	108	4, a. m.	33	80	2,175	3.0	725	30.2
II	2, p. m.	53	108	8, p. m.	41	72	2,900	6.0[2]	644	26.9
III	3, p. m.	48	85	6, p. m.	46	60	1,375	3.0[2]	850	35.4
IV	8, a. m.	54	114	11, a. m.	46	78	1,725	3.0	575	24.0
V	8, a. m.	34	118	9, p. m.	39	109	1,175	1.5	783	32.6
VI[1]	11, a. m.	50	100	13, a. m.	{47	65	1,825}	2.0	{912	38.0
					{34	78	1,975}		{988	41.1
VII	11, p. m.	41	124	14, a. m.	53	105	1,475	2.5	590	24.6
VIII	16, a. m	32	95	18, a. m.	34	77	1,200	2.0	600	25.0
IX	19, a. m.	51	114	22, a. m.	33	79	2,375	3.0	792	33.0
X	23, a. m.	50	100	24, p. m.	45	81	1,025	1.5	683	28.5
XI	28, a. m.	53	108	1, p. m.[4]	33	80	2,650	3.5	757	31.5
XII	31, a. m.	53	108	2, p. m.[4]	41	87	1,475	2.5	590	24.6
Sums							23,270	30.5	9,489	395.4
Mean of 13 paths							1,790		730	30.4
Mean of 30.5 days									763	31.8
Low areas.										
I	1, p. m.	37	120	10, p. m.	47	60	4,600	9.0[3]	920	38.3
II	2, p. m.	47	106	5, a. m.	42	70	2,200	2.5	880	36.7
III	3, p. m.	32	107	8, a. m.	48	54	3,550	4.5	789	32.9
IV	10, p. m.	47	101	12, a. m.	32	81	1,725	1.5	1,150	47.9
V	11, p. m.	54	114	14, p. m.	47	60	2,675	3.0	892	37.2
VI	12, p. m.	37	97	13, p. m.	37	79	1,150	1.0	1,150	47.9
VII	13, a. m.	33	115	17, a. m.	50	68	3,625	4.0	906	37.8
VIII	17, p. m.	53	105	21, a. m.	50	68	2,300	3.5	657	27.4
IX	19, a. m.	35	95	19, p. m.	32	91	300	0.5	600	25.0
X	20, p. m.	54	114	24, a. m.	47	60	2,725	3.5	779	32.4
XI[1]	23, p. m.	54	114	{28, a. m.	48	54}	3,600	4.5	800	33.3
	24, a. m.	26	97	}			3,925	4.0	981	40.9
XII	25, a. m.	48	123	1, a. m.[4]	47	60	5,075	7.0	725	30.2
XIII	26, a. m.	26	97	27, p. m.	28	82	1,100	1.5	733	30.5
Sums							38,550	46.0	11,962	498.4
Mean of 14 paths							2,574		854	35.6
Mean of 46.0 days									838	34.9

[1] Considered as two in sums and means. [2] Stationary for 1.5 days. [3] Stationary for 4 days. [4] April.

Lows.—No. I originated in southern California, moved northward to Victoria, remained there for four days, and then moved eastward to the Atlantic Ocean. No. II originated in eastern Montana, and moved generally eastward to the southern New England coast. No. III was first noted in southwestern Texas, and moved northeastward, passing out into the Atlantic beyond Newfoundland. No. IV originated in central North Dakota, and moved rapidly southeastward to the south Atlantic coast, causing considerable snow in the District of Columbia and Virginia. Nos. V, VIII, X, and XI were first observed in the British Northwest, and moved almost due eastward to the Atlantic Ocean. No. V remained stationary in West Alberta for three days before moving, while No. XI was joined on the Maine coast by another low, which had moved up from southern Texas, keeping along the coast line during almost its entire course. No. VI was a fast-moving minor depression, which moved in one day from eastern Kansas to southern Virginia. It was really an offshoot from the lower portion of the trough of No. V. No. VII originated in southwestern Arizona, moved eastward to the middle Gulf coast, and thence northeastward, passing out north of the Gulf of St. Lawrence. No. IX was a slight local disturbance in the east portion of the west Gulf States, an offshoot from the lower portion of the trough of No. VIII. No. XII first appeared in British Columbia, pursued an irregular course to the North Carolina coast by way of central Texas and the Ohio Valley, and then turned northward along the coast, disappearing off Cape Breton Island on the morning of April 1, with the lowest barometer reading of the month, 28.84 inches. No. XIII was a local Gulf of Mexico storm of moderate intensity.—*H. C. Frankenfield, Forecast Official.*

RIVERS AND FLOODS.

At the close of February, 1900, the Upper Mississippi River was closed by ice as far south as the mouth of the Des Moines River, but during March it opened generally, commencing on the 8th at Hannibal, Mo. The latest date of opening was the 31st, at St. Paul, Minn. The only casualties accompanying the movement of the ice were a few of a minor nature at Davenport, Iowa. At the time of breaking up there were rapid rises in the water from Davenport, Iowa, southward, and at Keokuk, Iowa, a stage of 16 feet, or 1 foot above the danger line, was recorded in the early morning of the 12th. The last ice seen was at Dubuque, Iowa, on the 31st, while its southern limit was Cairo, Ill., at which place some floating ice was observed on the 1st and 2d.

In the Des Moines River the ice broke on the 11th, causing flood stages along its lower portion, and bottom lands on both the Iowa and Missouri sides of the river were overflowed.

Navigation was opened at Keokuk, Iowa, on the 18th; at Hannibal, Mo., on the 24th, and at Davenport, Iowa, on the 26th.

The Lower Mississippi River rose steadily after the 6th, and the average stages were from 8 to 11 feet greater than during February, 1900, except at New Orleans, La., where the increase was only about 6 feet.

In the Missouri River the ice at Omaha, Nebr., moved out on the 11th, and at Yankton and Pierre, S. D., on the 12th. On the 12th and 13th, respectively, navigation was resumed at Sioux City, Iowa, and Yankton, S. D.

At Kansas City, Mo., on the 9th, an ice gorge caused damage to an amount exceeding $10,000 to Government work along the river.

The Illinois River and tributaries were at flood stage after the 10th of the month, and remained so at its close. The crest of the flood wave reached Peoria, Ill., on the 16th, and Beardstown, Ill., on the 18th. At both these places stages about 6 feet above the danger lines were recorded, and much damage resulted along the entire river. Mills were compelled to suspend operations, bridges were carried away, levees broken in some places, and thousands of acres of fine farming lands inundated.

Nothing of importance transpired along the Ohio River and tributaries. The average stages were a few feet higher than during February, the crests occuring during the first decade of the month. There was a decline during the second decade, followed by another rise during the third.

The rivers of the Middle Atlantic States were comparatively quiet. The situation along the Hudson became somewhat alarming on several occasions on account of the movement of ice gorges, but nothing serious occurred, and at the close of the month everything was in readiness for the opening of navigation.

Flood stages occurred on the Upper Susquehanna River on the 2d, lasting only for a day or two, however. At Wilkesbarre, Pa., traffic was somewhat obstructed by the high water.

There was a moderate flood in the James River on the 2d and 3d. Ample warning was given, and all movable property along the river removed to places of safety.

Heavy rains at intervals during the month caused decided temporary rises in the rivers of the South Atlantic States, and in a few instances danger-line stages were reached. Timely warning was given in all cases, and no avoidable loss occurred.

Accurate forecasts were also made of the flood stages which occurred in the Coosa River, Ala., on the 21st and 22d.

The Lower Tombigbee and the Black Warrior rivers were at a high stage throughout the month, and warnings of danger-line stages were issued on the 20th. The warnings were fully justified, the rise in the Tombigbee continuing until the 29th, when a stage of 47.6 feet was reached at Demopolis, Ala., 12.6 feet above the danger line. At Tuscaloosa, Ala., a stage of 51 feet was reached on the 20th, 8 feet above the danger line.

On the Pacific coast the principal occurrence of interest was the sudden rise in the Upper Sacramento River. At Red Bluff, Cal., there was a rise of 13.4 feet from the 7th to the 8th, and the danger-line stage of 23 feet was exceeded by 0.2 foot. The waters receded, however, almost as rapidly as they rose. The Lower Sacramento was also quite high throughout the month, but no flood stages were reported.

The highest and lowest water, mean stage, and monthly range at 131 river stations are given in Table XI. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

The thickness of ice in the rivers since December 4, 1899, is given in the following table. It will be noticed that there was a gradual decrease during March, 1900, and a total disappearance by the end of the month, except in the extreme north. At the corresponding period of March, 1899, there were 12 inches of ice as far south as Sioux City, Iowa, and 24 inches at Bismarck, N. D., whereas this year there was none.—*H. C. Frankenfield, Forecast Official.*

Thickness of ice in rivers (in inches), winter of 1899–1900.

Stations.	December.				January.					February.				March.			
	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19	26
Moorhead, Minn	.....	.....	.....	.....	12.0	19.0	21.0	24.0	26.0	30.0	32.0	36.0	36.5	36.5	36.5	36.0	26.0
Williston, N. Dak	1.0	1.5	6.0	8.0	16.0	16.0	16.0	.....	21.0	24.0	26.0	27.5	29.5	29.5	28.0	29.0	25.0
Bismarck, N. Dak	.....	.....	1.5	9.0	16.0	17.0	17.0	15.0	17.0	17.0	22.0	25.0	26.0	26.0	23.0	23.0	.....
Pierre, S. Dak	.....	.....	1.5	3.5	14.0	15.0	10.5	8.0	14.0	15.5	16.0	21.0	20.0	22.5	.....	.....	.....
Yankton, S. Dak	.....	.....	5.0	7.0	10.0	11.0	10.5	8.5	10.0	11.5	14.5	15.5	20.0	22.0	.....	.....	.....
Sioux City, Iowa	.....	.....	.....	1.5	10.0	8.0	6.0	.....	.....	.....	14.0	16.0	18.0	19.0	.....	.....	.....
Omaha, Nebr	.....	.....	.....	.....	10.0	.....	.....	.....	.....	6.0	12.0	15.0	17.0	14.0	.....	.....	.....
St. Paul, Minn	.....	.....	.....	.....	12.5	.....	20.0	16.0	18.0	20.0	22.0	23.0	24.0	24.0	22.0	22.0	20.0
La Crosse, Wis	.....	.....	.....	5.0	10.0	9.0	7.5	6.0	9.0	11.5	10.5	14.0	14.0	15.5	14.5	13.5	7.0
Dubuque, Iowa	.....	.....	4.0	5.0	12.0	10.5	10.0	.....	.....	11.0	11.0	14.0	16.0	18.0	.....	.....	.....
Davenport, Iowa	.....	.....	.....	.....	8.0	9.0	6.0	.....	.....	10.0	10.0	15.0	17.0	17.5	16.0	.....	.....
Keokuk, Iowa	.....	.....	.....	.....	10.0	.....	5.0	.....	.....	8.0	0.0	12.0	11.0	9.0	.....	.....	.....
Hannibal, Mo	.....	.....	.....	.....	8.0	.....	.....	.....	.....	4.0	0.0	.....	.....	.....	.....	.....	.....
Topeka, Kans	.....	.....	.....	.....	6.5	.....	.....	.....	.....	.....	.....	2.0	3.0	.....	.....	.....	.....
Wichita, Kans	.....	.....	.....	.....	2.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburg, Pa	.....	.....	.....	.....	4.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Parkersburg, W. Va	.....	.....	.....	.....	1.0	2.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisville, Ky	.....	.....	.....	.....	5.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Columbus, Ohio	.....	.....	.....	.....	7.0	1.0	.....	.....	3.0	0.5	.....	0.5	1.0	.....	.....	.....	.....
New Brunswick, N. J	.....	.....	.....	.....	.....	6.0	.....	.....	2.5	.....	.....	.....	.....	.....	.....	.....	.....
Bangor, Me	.....	.....	2.0	2.0	4.5	8.0	9.0	12.0	14.0	14.0	17.0	17.0	16.0	16.0	16.0	16.0	14.0
Albany, N. Y	.....	.....	.....	.....	4.0	5.0	8.5	.....	2.5	8.0	7.5	2.0	4.0	5.0	5.0	8.0	.....
Harrisburg, Pa	.....	.....	.....	.....	.....	3.0	3.0	.....	.....	4.0	.....	.....	.....	.....	.....	.....	.....
Philadelphia, Pa	.....	.....	.....	.....	2.0	2.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington, D. C	.....	.....	.....	.....	5.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lynchburg, Va	.....	.....	.....	.....	4.0	2.0	.....	.....	.....	.....	.....	0.5	.....	.....	.....	.....	.....

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective sections of the Climate and Crop Service. The name of the section director is given after each summary.

Rainfall is expressed in inches.

Alabama.—The mean temperature was 52.4°, or 3.2° below normal; the highest was 87°, at Prattville on the 11th, and the lowest, 17°, at Madison on the 16th. The average precipitation was 5.42, or 0.34 below normal; the greatest monthly amount, 8.64, occurred at Eufaula, and the least, 1.78, at Warrior.

While the rainfall for the entire State was slightly below the normal, the rains were so frequent and heavy as to seriously retard all farm work.—*F. P. Chaffee.*

Arizona.—The mean temperature was 59.1°, or 3.7° above normal; the highest was 101°, at Fort Mohave on the 11th, and the lowest, 10°, at Snowflake on the 2d. The average precipitation was 0.64, or 0.34 below normal; the greatest monthly amount, 2.74, occurred at Mount Huachuca, while none fell at several stations.—*W. G. Burns.*

Arkansas.—The mean temperature was 51.2°, or 0.2° above normal; the highest was 90°, at Prescott and Washington on the 12th and at Rison on the 13th, and the lowest, 7°, at Pond on the 1st. The average precipitation was 2.50, or 2.56 below normal; the greatest monthly amount, 5.55, occurred at Blanchard, and the least, 0.76, at Silversprings.—*E. B. Richards.*

California.—The mean temperature for the State, obtained by weighting the reports from 193 stations, so that equal areas have about equal weight, was 55.7°, which was 3.9° above the March normal for the State, as determined from 161 records; the highest recorded temperature was 105°, at Ogilby, San Diego County, on the 10th; the lowest, 5° below zero, at Bodie, Mono County, on the 6th. The average precipitation for the State, as determined from the records of 195 stations, was 2.38; the deficiency, as indicated by reports from 164 stations which have normals, was 0.74; the greatest monthly amount was 12.24, at La Porte, Plumas County, while none fell at several stations in southern California.—*Alexander G. McAdie.*

Colorado.—The mean temperature was 39.0°, or 5.2° above normal; the highest was 85°, at Lamar on the 10th, and the lowest, 18° below zero, at Troutvale on the 6th. The average precipitation was 0.47, or 0.86 below normal; the greatest monthly amount, 1.43, occurred at Ruby, and the least, trace, at Perrypark, Saguache, and Vilas.—*F. H. Brandenburg.*

Florida.—The mean temperature was 63.6°, or 2.1° below normal; the highest was 93°, at Brooksville on the 23d, and the lowest, 25°, at Stephensville on the 2d. The average precipitation was 6.82, or 3.90 above normal; the greatest monthly amount, 12.37, occurred at McClenny, and the least, 2.40, at Clermont.—*A. J. Mitchell.*

Georgia.—The mean temperature was 53.2°, or 2.7° below normal; the highest was 88°, at Mauzy on the 12th and at Valona on the 14th, and the lowest, 17°, at Dahlonega and Diamond on the 17th. The average precipitation was 5.43, or practically normal; the greatest monthly amount, 8.12, occurred at Americus, and the least, 3.40, at Covington.—*J. B. Marbury.*

Idaho.—The mean temperature was 42.0°, or 6.9° above normal; the highest was 86°, at Hagerman on the 31st, and the lowest, 2° below zero, at Marysville on the 28th. The average precipitation was 1.16, or 0.44 below normal; the greatest monthly amount, 4.02, occurred at Fort Sherman, while none fell at Blackfoot and Downey.—*S. M. Blandford.*

Illinois.—The mean temperature was 34.4°, or 3.1° below normal; the highest was 62°, at St. John on the 12th, and the lowest, 4° below zero, at Scales Mound on the 17th. The average precipitation was 1.99, or about 1.25 below normal; the greatest monthly amount, 4.02, occurred at Palestine, and the least, 0.12, at Monticello.—*M. E. Blystone.*

Indiana.—The mean temperature was 35.6°, or 2.8° below normal; the highest was 75°, at Bedford on the 11th, and the lowest, 6° below zero, at Angola on the 16th. The average precipitation was 2.06, or 1.61 below normal; the greatest monthly amount, 3.46, occurred at Logansport, and the least, 0.74, at Winamac.—*C. F. R. Wappenhans.*

Iowa.—The mean temperature was 30.7°, or 2.5° below normal; the highest was 81°, at Wapello on the 22d, and the lowest, 13° below zero, at Osage on the 16th. The average precipitation was 2.06, or 0.31 below normal; the greatest monthly amount, 5.15, occurred at Fonda, and the least, 0.45, at Whitten.—*J. R. Sage, Director; G. M. Chappel, Assistant.*

Kansas.—The mean temperature was 42.5°, or 1.8° above normal; the highest was 94°, at Englewood on the 12th, and the lowest, 7° below zero, at Emporia and Marion on the 1st. The average precipitation was 0.80, or 0.72 below normal; the greatest monthly amount, 2.14, occurred at Wakeeney, and the least, trace, at Hays and Winona.—*T. B. Jennings.*

Kentucky.—The mean temperature was 42.8°, or 2.9° below normal; the highest was 81°, at Paducah on the 11th, and the lowest, 3° below zero, at Shelby City on the 17th. The average precipitation was 2.58, or 2.93 below normal; the greatest monthly amount, 5.14, occurred at Eubank, and the least, 1.11, at Canton.—*H. B. Hersey.*

Louisiana.—The mean temperature was 59.5°, or 2.3° below normal; the highest was 93°, at Monroe on the 13th, and the lowest, 24°, at Plain Dealing, on the 1st. The average precipitation was 5.69, or 0.99 above normal; the greatest monthly amount, 8.39, occurred at Venice, and the least, 3.22, at Cheneyville.—*W. T. Blythe.*

Maryland and Delaware.—The mean temperature was 39.0°, or 4.4° below normal; the highest was 74°, at Easton, Md., on the 7th, and the lowest, 8° below zero, at Boettcherville, Md., on the 18th. The average precipitation was 3.22, or 0.36 below normal; the greatest monthly amount, 5.05, occurred at Sunnyside, Md., and the least, 1.31, at Denton, Md.—*F. J. Wals.*

Michigan.—The mean temperature was 22.8°, or 5.4° below normal; the highest was 56°, at St. Joseph on the 30th, and the lowest, 29° below zero, at Humboldt on the 23d. The average precipitation was 1.80, or 0.54 below normal; the greatest monthly amount, 4.46, occurred at Fitchburg, and the least, 0.37, at Sault Ste. Marie.

This is the coldest March on record (back to and including 1887). While the precipitation was below the normal, the amount of snowfall was comparatively greater than during any previous March on record excepting March, 1899, when the average total fall was 22.5 inches. During March, 1900, the southern counties were covered with snow most of the month. During the month, and in fact during the entire winter, the snowfall has generally been much less than usual in the northern counties and upper peninsula, and considerably above the normal in the central and southern counties. The average total precipitation for the State was less than during March, 1897, 1898, and 1899.—*C. F. Schneider.*

Minnesota.—The mean temperature was 23.4°, or about normal; the highest was 69°, at Camden on the 12th, and the lowest, 30° below zero, at Tower on the 4th. The average precipitation was 1.30, or about normal; the greatest monthly amount, 2.81, occurred at St. Peter and Worthington, and the least, 0.15, at Mount Iron—*T. S. Outram.*

Mississippi.—The mean temperature was 53.8°, or about 3° below normal; the highest was 90°, at Natchez on the 12th and at Port Gibson on the 13th, and the lowest, 20°, at Aberdeen on the 2d. The average precipitation was 4.77, or about 1.00 below normal; the greatest monthly amount, 8.84, occurred at Columbus, and the least, 2.20, at Austin.—*H. E. Wilkinson.*

Missouri.—The mean temperature was 40.4°, or 1.4° below normal; the highest was 88°, at Wylie on the 11th, and the lowest, 4° below zero, at Maryville and Conception on the 16th. The average precipitation was 1.48, or 1.98 below normal; the greatest monthly amount, 3.41, occurred at New Madrid, and the least, 0.40, at Mount Vernon.

Over much the greater portion of the State the precipitation of the month was remarkably light, the central and northeast sections receiving a little less than half, and the southern sections only about one-third the usual amount. In portions of the central and northern sections, however, the soil really received more than the usual amount of moisture through the melting of the snow which covered the ground to depths ranging from 10 to 28 inches at the beginning of the month.—*A. E. Hackett.*

Montana.—The mean temperature was 35.2°, or 7.9 above normal; the highest was 75°, at Crow Agency on the 11th, and the lowest, 25° below zero, at Glasgow on the 6th. The average precipitation was 0.88, or 0.12 above normal; the greatest monthly amount, 3.02, occurred at Troy, and the least, 0.10, at Crow Agency.—*E. J. Glass.*

Nebraska.—The mean temperature was 36.2°, or 2.3° above normal; the highest was 90°, at Alma on the 10th and 11th, and the lowest, 11° below zero, at Crete on the 16th. The average precipitation was 0.62, or 0.51 below normal; the greatest monthly amount, 2.34, occurred at Hartington, and the least, trace, at Lodgepole and Merriman.—*G. A. Loveland.*

Nevada.—The mean temperature was 44.2°, or about 6° above normal; the highest was 81°, at Candelaria on the 12th, and the lowest, 3°, at Empire Ranch on the 6th. The average precipitation was 0.51, or about 0.80 below normal; the greatest monthly amount, 2.41 occurred at Lewer's Ranch, and the least, trace, at Toano.

Exceptionally mild weather prevailed throughout the month. It was the warmest and driest March in the past twelve years. Over the greater part of the State plowing and seeding progressed during the entire month.—*J. H. Smith.*

New England.—The mean temperature was 27.8°, or 3.2° below normal; the highest was 59°, at several stations in Massachusetts on the 19th and 23d, and the lowest, 30° below zero, at Flagstaff, Me., on the 5th. The average precipitation was 5.17, or 1.65 above normal; the greatest monthly amount, 8.57, occurred at Bar Harbor, Me., and the least, 2.60, at Cornwall, Vt.—*J. W. Smith.*

New Jersey.—The mean temperature was 35.6°, or 2.8° below normal; the highest was 67°, at Bridgeton and Cape May C. H. on the 23d, and the lowest, 9° below zero, at Deckertown on the 18th. The average precipitation was 3.51, or 0.38 below normal; the greatest monthly amount, 4.96, occurred at Ocean City, and the least, 2.48, at Friesburg.—*E. W. McGann.*

New Mexico.—The mean temperature was 47.4°, or 2.2° above normal; the highest was 88°, at Roswell on the 12th, and the lowest, 9° at Aztec on the 16th. The average precipitation was 0.67, or 0.11 above normal; the greatest monthly amount, 1.55, occurred at Fort Bayard, and the least, trace, at Raton. Owing to the mild winter plowing and planting was carried on during the month in the warmer sections, and nearly a month ahead of last year.—*R. M. Hardinge.*

New York.—The mean temperature was 25.2°, or 5.4° below normal; the highest was 61°, at Wappingers Falls on the 20th, and the lowest, 29° below zero, at Axton on the 12th. The average precipitation was 4.08, or 1.07 above normal; the greatest monthly amount, 10.47, occurred at North Lake, and the least, 1.01, at Lyndonville.—*R. G. Allen.*

North Carolina.—The mean temperature was 47.0°, or 1.5° below normal; the highest was 79°, at Cherryville and Henrietta on the 11th, and the lowest, 5°, at Brewers on the 17th. The average precipitation was 4.48, or 0.16 below normal; the greatest monthly amount, 7.60, occurred at Linville, and the least, 2.48, at Wilmington.—*C. F. von Herrmann.*

North Dakota.—The mean temperature was 21.0°, or 0.7° above normal; the highest was 77°, at Medora on the 11th, and the lowest, 24° below zero, at Towner on the 1st. The average precipitation was 1.09, or 0.13 above normal; the greatest monthly amount, 2.65, occurred at Ellendale, and the least, 0.15 at Dunseith.—*B. H. Bronson.*

Ohio.—The mean temperature was 32.9°, or 5.5° below normal; the highest was 70°, at Hanging Rock on the 13th, and the lowest, 9° below zero, at Hillhouse on the 12th. The average precipitation was 2.35, or 1.07 below normal; the greatest monthly amount, 4.30, occurred at Mansfield, and the least, 0.92, at Hudson.—*J. Warren Smith.*

Oklahoma.—The mean temperature was 49.9°, or 0.5° above normal; the highest was 95°, at Burnett on the 11th, and the lowest, 12°, at Hopeton and Jefferson on the 1st. The average precipitation was 0.76, or 1.33 below normal; the greatest monthly amount, 2.41, occurred at Lehigh, and the least, 0.03, at Edmond.—*C. M. Strong.*

Oregon.—The mean temperature was 49.3°, or 6.1° above normal, and the highest on record for the month of March; the highest was 99°, at Merlin on the 13th, and the lowest, 11°, at Lakeview on the 26th. The average precipitation was 4.63, or 0.24 below normal; the greatest monthly amount, 11.98, occurred at Glenora, and the least, 0.15, at Prineville.—*E. A. Beals.*

Pennsylvania.—The mean temperature was 31.2°, or 3.6° below normal; the highest was 66°, at Coatesville on the 23d, and the lowest, 23° below zero, at Dyberry on the 18th. The average precipitation was 3.61, or 0.46 above normal; the greatest monthly amount, 7.31, occurred at Somerset, and the least, 2.25, at Lycippus.—*T. F. Townsend.*

South Carolina.—The mean temperature was 51.6°, or 3.1° below normal; the highest was 79°, at Charleston and Yemassee on the 30th, and the lowest, 22°, at Santuc and Spartanburg on the 17th. The average precipitation was 4.22, or 0.66 above normal; the greatest monthly amount, 7.58, occurred at Greenville, and the least, 0.96, at Pinopolis.—*J. W. Bauer.*

South Dakota.—The mean temperature was 29.0°, or about 1° above normal; the highest was 78°, at Cherry Creek on the 10th and at Interior on the 11th, and the lowest, 19° below zero, at Wessington Springs on the 16th. The average precipitation was 1.66, or about 0.58 above normal; the greatest monthly amount, 3.89, occurred at DeSmet, and the least, 0.20, at Interior.—*S. W. Glenn.*

Tennessee.—The mean temperature was 46.5°, or about 2.0° below normal; the highest was 81°, at Memphis on the 11th, and the lowest, 2°, at Bristol on the 17th. The average precipitation was 3.66 or about 2.00 below normal; the greatest monthly amount, 6.82, occurred at Oakhill, and the least, 1.83, at Trenton.—*H. C. Bate.*

Texas.—The mean temperature, determined by comparison of 47 stations distributed throughout the State, was 0.5 below normal. There was a slight excess over the extreme northwest portion of the State, and a general deficiency elsewhere, with the greatest over southwest Texas and the east coast district. The highest was 92°, at Paris on the 12th, and the lowest, 15°, at Anna on the 1st. The average precipitation, determined by comparison of 52 stations distributed throughout the State, was 2.20 above the normal. Nearly normal conditions prevailed over the northwestern half of the State while there was a marked excess over the southeastern half, with the greatest, 9.02, at Cuero. The greatest monthly amount, 10.43, occurred at Cuero, and least, 0.05, at Valentine.—*I. M. Cline.*

Utah.—The mean temperature was 43.9°, or 7.0° above normal; the highest was 86°, at St. George on the 12th, 13th, and 31st, and the lowest, 6°, at Pinto on the 5th and Soldier Summit on the 6th. The average precipitation was 0.19, or 1.41 below normal; the greatest monthly amount, 1.20, occurred near Marysvale, while none fell at six stations. It was the clearest, driest, and warmest March on record for this State.—*L. H. Murdoch.*

Virginia.—The mean temperature was 41.9°, or about 3° below normal; the highest was 75°, at Farmville on the 23d, and the lowest, 2° below zero, at Blacksburg on the 17th and at Stephens City on the 18th. The average precipitation was 3.73, or 0.12 above normal; the greatest monthly amount, 6.17, occurred at Freeling, and the least, 1.36, at Manassas.—*E. A. Evans.*

Washington.—The mean temperature was 46.9°, or 6.6° above normal, and the warmest March on record; the highest was 83°, at Southbend on the 30th, and the lowest, 16°, at Northport on the 2d. The average precipitation was 3 91, or 1.08 above normal; the greatest monthly amount, 15.59, occurred at Union, and the least, trace, at Loomis.

On the account of the exceptional mildness of the month, the weather conditions were extremely favorable for the growth of the staple crops and the development of fruit. More than the usual amount of plowing and spring seeding was accomplished. Fall sown wheat is in splendid condition, and the pastures are as far advanced as is usual in May.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 38.5°, or 3.5° below normal; the highest was 78°, at Madison on the 13th, and the lowest, 5° below zero, at Burlington on the 18th. The average precipitation was 3.79, or 0.05 below normal; the greatest monthly amount, 6.48, occurred at Bluefield, and the least, 2.18, at Parkersburg.—*E. C. Vose.*

Wisconsin.—The mean temperature was 24.7°, or about 3.0° below normal; the highest was 62°, at Spooner on the 31st, and the lowest, 24° below zero, at Butternut on the 16th. The average precipitation was 1.26, or 0.67 below normal; the greatest monthly amount, 2.86, occurred at Pepin, and the least, 0.40, at Stevens Point.—*W. M. Wilson.*

Wyoming.—The mean temperature was 35.1°, or 6.1° above normal; the highest was 80°, at Burlington on the 13th and at Bittercreek on the 25th, and the lowest, 16° below zero, at Douglas on the 4th. The average precipitation was 0.44, or 0.97 below normal; the greatest monthly amount, 3.13, occurred at Fort Yellowstone, while none fell at Embar and Lusk.—*W. S. Palmer.*

SPECIAL CONTRIBUTIONS.

COMPARATIVE THERMOMETER READINGS AT NEW YORK, N. Y.

By ALFRED J. HENRY, Professor of Meteorology.

In the MONTHLY WEATHER REVIEW for October, 1898, Vol. XXVI, page 455, an account is given of the removal of the Weather Bureau office in New York, N. Y., from the Manhattan Building, No. 66 Broadway, to the American Surety Building, No. 100 Broadway. The roof of the last-named building is flat and appeared to offer exceptionally good exposures for the various meteorological instruments. The presence of an exhaust pipe to the southeastward of the thermometer shelter was noted as an objectionable feature at the time of removal, but it was believed it would only affect the thermometer readings when the wind was from the southeast. The experience of a single winter was, however, sufficient to convince the official in charge of the station that artificial heat was being communicated to the thermometers, not only by the exhaust pipe above referred to, but by a number of ventilating shafts that discharged hot air at varying distance from the thermometers.

Acting on Mr. Emery's recommendation, an instrument shelter was erected on the roof of the adjoining premises—the Schemerhorn Building—at a point slightly over 200 feet below the shelter on the American Surety Building but still about 110 feet above the street. The roof of the Schemerhorn Building is 101.5 feet above the Broadway sidewalk. The floor of the instrument shelter was placed 6.3 feet above the roof of the building and the thermometers were placed on cross pieces about a foot higher.

Comparative readings between thermometers in the two shelters were made from October 27 to November 5, and from November 11 to December 31. The mean results for the first period showed that the temperatures in the two shelters were

almost identical, except in the afternoon, when the maximum thermometer on the American Surety Building gave higher readings.

The second series of comparative readings, made later in the season, gave individual differences of as much as 10°, the thermometers on the American Surety Building reading in almost all cases the higher. The mean results are as follows:

Average temperature in standard thermometer shelters on the roofs of the American Surety and Schemerhorn buildings, respectively.

DRY THERMOMETER.

Date.	8 a. m.			8 p. m.		
	American Surety Building.	Schemerhorn Building.	Difference, A–S.	American Surety Building.	Schemerhorn Building.	Difference, A–S.
	°	°	°	°	°	°
November 11–30	42.4	41.0	1.4	45.9	45.1	0.8
December 1–31	35.7	33.8	1.9	39.4	37.1	2.3

MAXIMUM THERMOMETER.[1]

November 11–30	48.1	46.0	2.1	52.8	49.7	3.1
December 1–31	43.1	39.1	4.0	45.7	42.0	3.7

MINIMUM THERMOMETER.[1]

November 11–30	38.3	39.0	−0.7	39.9	40.1	−0.2
December 1–31	31.8	32.1	−0.3	31.5	31.5	0.0

[1] Set at 8 a. m. and 8 p. m. daily.

Thus we see the greatest differences are generally found in the daytime, although the maximum temperatures on the American Surety Building during the night hours averaged almost 4° higher than those on the lower building; the minimum temperatures on the American Surety Building, on the other hand, were slightly lower than those on the Schemerhorn Building. It is also to be noticed that the minimum temperatures in the two locations approached equality as the weather became colder. During December the mean results of the minimum temperatures, registered between 8 a. m. and 8 p. m., were identical, and those of the night-time, from 8 p. m. to 8 a. m., differed by only a fraction of a degree.

The monthly mean temperatures of the winter of 1898–1899, for the New York station, are probably a degree and a half too high, as compared with those of 1899–1900 by reason of the influence of artificial heat on the thermometers.

LOSS OF LIFE IN 1899 BY LIGHTNING.

By ALFRED J. HENRY, Professor of Meteorology.

The loss of human life by lightning in the United States during 1899, was greater than for any preceding year for which statistics have been collected.

Five hundred and sixty-two persons were killed outright or suffered injuries which resulted in death, and 820 persons received injuries varying in severity from slight physical shock to painful burns and temporary paralysis of some part of the body.

In the great majority of fatal cases death came quickly; in a few instances only did the patient regain consciousness after being struck. On the other hand, many persons were struck and rendered unconscious for a time, but soon rallied from the shock and regained their usual health. The most common form of disability resulting from lightning stroke appears to be partial paralysis of the arms and legs.

Many apparently remarkable escapes from death were chronicled during the year. In several cases the clothing of the person struck was set on fire, the body scarred and burned, yet, strange to say, complete recovery followed. This apparent immunity from death on the part of some persons is not easily explained. If we assume that the current is of an oscillatory character, that is to say, made up of a number of rapid discharges and recharges, we might argue, from the analogous case of a wire conductor the interior of which, in the case of very rapid alternations, may be almost free from current, that the injury to the human body would naturally be confined to the surface. Again we might explain the phenomenon by attributing it to the ability of certain individuals to withstand a much greater shock than others. It has been shown that among the lower animals the ability to resist injury varies widely in different members of the same family, and it is quite probable that the same characteristic holds in the case of man. The evidence afforded by cases of accidental contact with wires carrying a very high voltage is inconclusive, since the electrical contact in such cases is quite generally imperfect and rarely the same for any number of occurrences. There is as yet much uncertainty as to the maximum voltage that can be applied to the human body without fatal results.

Some anomalous results as regards the visible effect of lightning on the human body were observed during the year. In some cases of death the person struck showed scarcely any outward marks of the discharge, death apparently resulting from total collapse of the cellular tissues of the body. In other cases the apparent cause of death was manifest in the discoloration and burning of various portions of the body. One of the most singular cases in this respect was that of two brothers who were killed while driving together in a dog cart. They were found shortly after the flash lying side by side on the road, apparently as they had fallen out of the back of the vehicle. *The elder brother had no external sign of injury.* The younger brother presented the following appearance: The epidermis was burned over the chest and abdomen, not continuously, but in a number of circular holes from one-sixteenth to one-quarter of an inch in diameter. The metallic collar stud was fused and the skin beneath was deeply burned. The back from the neck to the buttocks was burned, but less severely than in front. The vest and shirt were charred, but the waistcoat and coat were uninjured. The ground was not disturbed where they fell.

The zone of danger from a stroke of lightning appears to be somewhat larger than is commonly supposed. In the ordinary conception of a lightning flash account is generally taken of a single discharge from cloud to earth or vice versa, with a diameter at the bounding surface between earth and air not exceeding a few inches at most. The circumstances attending fatalities by lightning are often inexplicable, if we confine ourselves to the supposed action or influence of a single bolt. Thus, we have an account of the killing of a span of horses attached to a wagon, and a man in the rear of the wagon, while the driver in front was not seriously injured. Other cases of a somewhat similar nature confirm the belief that not one but a number of discharges may pass from cloud to earth or vice versa within a comparatively small radius, within which, however, there may be small areas of safety. Photographs of the so-called ribbon flashes show that at times the discharge has a breadth of from 30 to 40 feet at the surface of the earth. Within these broad paths there appear to be narrow lanes, which are apparently free from violent electrical disturbances. A person who is fortunate enough to stand in one of these lanes might easily escape serious injury, while others near by would suffer death.

The greatest number of fatalities, 45 per cent, occurred in the open; the next greatest number, 34 per cent, occurred in houses; 11 per cent occurred under trees, and the least of all, 9 per cent, in barns.

The greatest number of fatalities at a single stroke was five. There was a single case of four deaths from a single stroke, two cases of three deaths and quite a number of cases of two deaths per stroke.

At least a dozen persons, mostly women, were killed either in the act of stripping clothes from a wire clothesline or by coming in close proximity thereto during a thunderstorm. The existence of a wire clothesline joining a neighboring tree and the corner of the house is a source of danger. If wire is used at all, it should not, under any circumstances, be stretched within 50 feet of a dwelling house.

Persons in a house during a thunderstorm should avoid chimneys and open windows. The middle of the room is probably the safest part. In the open, persons should never seek the shelter of trees. Wire fences and live stock should be avoided. If on horseback, it would be well to dismount and wait until the storm passes.

The number of deaths by lightning for each month of 1899, in each State and Territory, is shown by the figures of Table 1. The greatest number of fatalities in a single State, 56, occurred in Pennsylvania; the next greatest, 41, in Illinois. The greatest number of injuries in a single State, 124, also occurred in Pennsylvania; the next greatest, 103, in New York. In the last-named State the ratio of killed to injured was 1:4.5. In Illinois, on the other hand, more people were killed than injured, the ratio being 1:0.83. The ratio of killed to injured for the whole country was 1:1.46.

The greatest increase in the number of fatal cases in 1899, as compared with 1898, occurred in Illinois. There were also material increases in Pennsylvania, Ohio, North Carolina, Minnesota, and Michigan. The largest decreases were noted in Texas, New York, and Alabama.

TABLE 1.—*Deaths in the United States by lightning in* 1899.

States and Territories.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Alabama	.....	.....	.....	.....	1	1	.....	4	.....	.....	1	.....	7
Arizona	.....	.....	.....	.....	.....	1	1	1	1	.....	.....	.....	4
Arkansas	.....	.....	.....	.....	5	6	1	2	.....	.....	.....	.....	14
Colorado	.....	.....	.....	.....	1	5	2	1	.....	.....	.....	.....	9
Connecticut	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	2
Delaware	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	2
Florida	.....	.....	.....	.....	.....	1	1	.....	1	.....	.....	.....	3
Georgia	.....	.....	.....	.....	3	3	4	2	.....	.....	.....	.....	12
Idaho	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
Illinois	.....	.....	.....	1	18	6	4	9	3	.....	.....	.....	41
Indiana	.....	.....	.....	.....	3	9	10	1	4	1	.....	.....	28
Indian Territory	.....	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	3
Iowa	.....	.....	.....	.....	.....	8	3	6	.....	.....	1	.....	18
Kansas	.....	.....	.....	.....	2	.....	.....	3	2	.....	.....	.....	7
Kentucky	.....	.....	2	.....	3	3	1	5	1	.....	.....	.....	15
Louisiana	.....	.....	1	1	.....	1	1	4	.....	.....	.....	.....	8
Maine	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	5
Maryland	.....	1	.....	.....	3	1	2	7	.....	.....	.....	.....	14
Massachusetts	.....	.....	1	1	6	2	1	.....	.....	.....	.....	.....	11
Michigan	.....	.....	.....	3	.....	6	9	1	2	.....	.....	.....	21
Minnesota	.....	.....	.....	.....	1	4	6	10	3	.....	.....	.....	24
Mississippi	.....	.....	.....	.....	3	.....	.....	1	.....	.....	.....	.....	4
Missouri	.....	.....	.....	.....	5	4	2	3	2	.....	.....	.....	16
Montana	.....	.....	.....	.....	.....	2	4	2	1	.....	.....	.....	9
Nebraska	.....	.....	.....	.....	5	4	7	.....	.....	1	.....	.....	17
New Hampshire	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
New Jersey	.....	.....	.....	.....	.....	.....	2	2	1	.....	.....	.....	5
New Mexico	.....	.....	.....	.....	.....	.....	3	1	.....	.....	.....	.....	4
New York	.....	.....	.....	1	.....	5	8	7	2	.....	.....	.....	23
North Carolina	.....	.....	3	.....	.....	6	5	1	4	.....	.....	.....	19
North Dakota	.....	.....	.....	.....	.....	2	2	.....	1	.....	.....	.....	5
Ohio	.....	.....	.....	.....	7	9	6	9	3	.....	.....	.....	34
Oklahoma	.....	.....	.....	.....	3	2	2	2	1	.....	.....	.....	10
Pennsylvania	.....	.....	.....	.....	17	13	9	13	4	.....	.....	.....	56
South Carolina	.....	.....	1	.....	.....	3	.....	7	1	.....	.....	.....	12
South Dakota	.....	.....	.....	.....	.....	1	3	9	.....	.....	.....	.....	13
Tennessee	.....	.....	1	.....	2	4	4	5	1	.....	.....	.....	17
Texas	3	.....	.....	1	3	1	4	3	2	.....	2	.....	19
Vermont	.....	.....	.....	.....	.....	1	2	1	.....	.....	.....	.....	4
Virginia	.....	.....	.....	.....	7	.....	3	.....	1	.....	.....	.....	11
West Virginia	.....	.....	.....	2	5	2	2	2	1	.....	.....	.....	14
Wisconsin	.....	.....	.....	1	4	4	1	7	1	.....	.....	.....	18
Wyoming	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	2
Cuba	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1
Total	3	1	10	11	108	128	120	133	43	2	4	.....	563

No definite conclusions can be reached as to the cause of the increase in one region as compared with another. The number of thunderstorm days in Nebraska, Iowa, Minnesota, Wisconsin, and Michigan, in 1899 was considerably greater than in the preceding year, and there was also an increase in the number of deaths by lightning. In Pennsylvania, however, where the increase in deaths in 1899 over 1898 was about 140 per cent, there was a less number of thunderstorm days in 1899 than in 1898. In 1898 the number of fatalities in New York State was 36; thunderstorm days, 135. In 1899 the fatalities were 23; thunderstorm days, 121. The fatalities for Pennsylvania in 1898 were 23; thunderstorm days, 142. The fatalities in 1899 were 56; thunderstorm days, 129. It would seem, therefore, that the number of fatalities by lightning in any region is not a direct function of the number of thunderstorm days.

In both Pennsylvania and Illinois, where the increase in deaths in 1899, as compared with 1898, was most pronounced, there was an exceptionally large number of fatal cases in May, as may be seen by Table 1. In Illinois there was a large number of severe storms during that month; in Pennsylvania there were two severe storms in the western part of the State, but the month as a whole was not unusually productive of thunderstorms.

TABLE 2.—*Number of persons in the United States injured by lightning in* 1899.

States and Territories.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Alabama	.....	.....	1	.....	.....	.....	2	2	.....	.....	.....	.....	5
Arkansas	.....	.....	.....	.....	2	4	.....	.....	.....	.....	.....	.....	6
California	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1
Colorado	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	2
Connecticut	.....	.....	3	.....	.....	7	14	3	1	.....	.....	.....	28
Dist. of Columbia	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	2
Florida	.....	.....	.....	.....	.....	3	.....	.....	1	.....	.....	.....	4
Georgia	.....	2	.....	.....	2	1	.....	1	.....	.....	.....	.....	6
Illinois	.....	.....	3	.....	7	4	3	18	2	.....	.....	.....	34
Indiana	.....	.....	3	.....	.....	17	12	6	9	.....	.....	.....	47
Iowa	.....	.....	.....	.....	.....	10	8	5	.....	2	.....	.....	25
Kansas	.....	.....	.....	.....	.....	1	2	4	.....	.....	.....	.....	7
Kentucky	.....	.....	4	.....	.....	3	2	2	.....	.....	.....	.....	11
Louisiana	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	2
Maine	.....	.....	1	.....	1	11	13	1	.....	.....	.....	.....	27
Maryland	.....	.....	.....	.....	2	4	5	3	1	.....	.....	.....	15
Massachusetts	.....	.....	3	2	.....	14	5	2	.....	.....	.....	.....	26
Michigan	.....	.....	.....	1	6	17	9	4	2	2	.....	.....	41
Minnesota	.....	.....	.....	.....	.....	.....	4	1	.....	1	.....	.....	6
Mississippi	.....	.....	.....	.....	.....	.....	4	3	.....	.....	.....	.....	7
Missouri	.....	2	.....	.....	3	9	7	3	1	.....	.....	.....	25
Montana	.....	.....	.....	.....	.....	2	2	.....	.....	.....	.....	.....	4
Nebraska	.....	.....	.....	.....	2	3	6	.....	.....	.....	.....	.....	11
New Hampshire	.....	.....	.....	.....	.....	8	1	1	1	.....	.....	.....	11
New Jersey	2	.....	.....	.....	1	5	24	8	.....	.....	.....	.....	40
New York	.....	.....	.....	2	4	23	56	18	.....	.....	.....	.....	103
North Carolina	.....	.....	4	.....	.....	1	4	3	.....	.....	.....	.....	12
North Dakota	.....	.....	.....	.....	.....	.....	1	5	.....	.....	.....	.....	6
Ohio	.....	.....	8	1	23	21	18	14	4	.....	.....	.....	89
Oklahoma	.....	.....	.....	.....	.....	.....	7	.....	.....	.....	.....	.....	9
Pennsylvania	.....	.....	1	9	20	30	33	23	8	.....	.....	.....	124
Rhode Island	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
South Carolina	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
South Dakota	.....	.....	.....	2	.....	.....	3	6	.....	.....	.....	.....	11
Tennessee	.....	3	5	.....	.....	4	.....	2	.....	.....	.....	.....	14
Texas	.....	.....	.....	.....	12	.....	1	.....	.....	.....	.....	.....	13
Utah	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	2
Vermont	.....	.....	.....	.....	.....	.....	4	.....	1	.....	.....	.....	5
Virginia	.....	.....	.....	.....	1	3	.....	2	.....	.....	.....	.....	6
West Virginia	.....	.....	.....	.....	2	5	1	2	3	.....	.....	.....	13
Wisconsin	.....	.....	.....	2	3	4	.....	6	1	.....	.....	.....	16
Wyoming	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	2
Total	2	7	34	19	91	222	247	157	35	6	.....	.....	820

Injured.—In houses, 453; in the open, 161; in barns, 82; under trees, 45.

HURRICANES OF 1895 AND 1896 IN THE PHILIPPINE ARCHIPELAGO.

By F. O. STETSON.

The Manila Observatory has published a volume of 112 folio pages (Tifones del Archipiélago Filipino y Mares Circunvecinos, 1895 y 1896. Estudio de los Mismos por el P. Juan Doyle, S. J., Sub-Director Del Observatorio, Manila, 1899) containing a careful account of the cyclones of the Philippines and adjacent waters during 1895 and 1896. While there is no attempt

to make the list complete, the author, in addition to notes on a number of minor depressions, gives a detailed account of thirty-three cyclonic storms, selected by reason of their violence or of the number of observations available for study. The classification adopted is that of Algué (Baguios ó Ciclones Filipinos. Estudio Teórico-Practico, por el P. José Algué, S. J., Director del Observatorio), who groups the hurricanes, in accordance with their month of occurrence, as follows: First group, December, January, February, March; second group, April, May, October, November; third group, June, July, August, September. The local name, "baguios," applies to a storm of the same general character as the West Indian hurricane or Chinese typhoon.

The mean trajectory of hurricanes of the first group may be briefly described as beginning at the meridian of 140° east and between 8° and 9° north latitude, either recurving at about 130° east and between the fifteenth and nineteenth parallels or extending in a direction a little north of west to Indo-China. It follows from this that from December to March the northern Philippines are seldom visited by hurricanes, as the latter either recurve before reaching the eastern shore of the islands or cross Mindanao and the Jolo Archipelago. The mean latitude of the trajectories changes slightly from month to month, being lowest in December and highest in March. The hurricanes of this group that enter the China Sea do not recurve, unless, perhaps, in the interior of Asia, where their course, from lack of observations, can not be followed with certainty. This is also true, in general, of those of the second group, although a few recurve south of the Strait of Formosa. The average cyclone of the second group develops at about 134° east, and either takes a general northwesterly course, recurving between the sixteenth and twenty-first parallels, or else moves in a somewhat more southerly direction, crossing the China Sea. The hurricanes of the third group originate between the eighth and twentieth parallels and the one hundred and thirty-second and one hundred and forty-second meridian; that is, in somewhat higher latitudes than in the other months, and the zones they traverse are also further north, reaching the Asiatic coast between the Island of Hainan and the Strait of Formosa. Of those that recurve, some do so east of Luzon, but the majority in the China Sea.

Among the more noteworthy storms of the period under discussion may be mentioned the hurricane of July 24–30, 1896. Developing several hundred miles to the eastward of the islands, it moved to the west and north with an average velocity of about 12 miles per hour, reaching Aparri, on the northern coast of Luzon, on the 28th. Although the barometer fell to 28.19 inches, the storm was not destructive at Aparri and the rainfall was unusually light, the total precipitation at this place, from the 25th to the 29th, amounting to about 1.1 inches. Crossing the China Sea, where its velocity of translation increased to 15 miles per hour, the hurricane struck the Asiatic coast at Macao and Hongkong on the 29th with a fury not exceeded since the great typhoon of 1894. The waves rose to the level of the houses, uprooting trees and tossing about large fragments of stone. Ships were swept from their moorings and destroyed, and the public gardens of Hongkong were entirely ruined. Although warning of the storm was given by the Hongkong Observatory on the morning of the 29th, 52 lives were lost. The Manila Observatory had telegraphed to Hongkong the usual notice of the development of the cyclone, and on the 28th had sent the following despatches:

The depression announced is a cyclone of great violence. It is now central on the northeast point of Luzon; its direction appears to be from south-southeast to north-northwest.

The cyclone is apparently directed now more toward the west. Its true direction appears to be northwest one-quarter west. It is not known if this will change.

At Macao the anemometer was disabled by the wind; at Hongkong a velocity of 108 miles was recorded. The author attempts to draw from the records of this storm some confirmation of the theory that the force of the wind is proportional to the barometric gradient *chiefly when the pressure is increasing*. He points to the fact that at Aparri, where the pressure decreased as much as 12mm. in a single hour, no damage was done, while on the Asiatic coast, where the decrease was much more gradual, the storm was very destructive. But at Macao there was a sudden *rise* in pressure of 7.5mm. in one hour, and to this, in part, he attributes the greater violence of the storm at that place. This idea is hardly confirmed by the printed records, inasmuch as there was, in the space of one hour, at uninjured Aparri, an actual increase in pressure of 9.3mm., exceeding by almost 2mm. that at Macao, and more than twice as great as any, during the same interval of time, at storm-ravaged Hongkong.

A hurricane worthy of study both because of its violence and of its unusual course, was that of the Gravina, May 8–14, 1895, so called because it destroyed the merchant steamer of that name, with much loss of life, in the China Sea. After traversing the Bisayas and Mindoro, it recurved sharply and reentered the archipelago, crossing Luzon in a northeasterly direction.

The present volume, following that for 1894, is one of a periodic series, which the observatory hopes to contribute to the knowledge of the subject.

NOTES ON CLIMATE IN THE PHILIPPINES.

By Lieut. I. N. BREWER (formerly of the Weather Bureau), dated Manila, P. I., February 26, 1900.

Every one accepts the Spanish "six months rain, six months dust, and six months anything" as the full statement of the conditions over here. My observations from standard instruments and impressions, recorded each day, are about as follows: Shortly after our arrival, March 4, 1899, we had a few days of rain followed by dry weather until well along into April, when we began to have thundershowers, which increased in frequency until July, when days without rain were the exception. This condition lasted until November, when the dry season came on very rapidly. Since November 23 I have recorded less than ten showers, many but mere sprinkles. This for northern Pangasinan. On two occasions we have observed distant lightning. During March and April, when we were generally near Manila, it was quite hot in the sun, but the nights were always comfortable though often we have slept out with no cover. When there is no wind it is very hot in the sun. On one march I remember fully 50 per cent of the men fell out from heat exhaustion. After leaving Manila, April 22, we rarely suffered from heat although during July a temperature of 91° in the shade was recorded on several occasions. This dry season found us north of Tarloe, where radiation is so great at night that two blankets are very comfortable. The dew is so heavy that at times it drops off the tin roof of the quarters. The wind blows a gale every afternoon and it is very dry. The dry and wet bulbs show a difference of 14°, but by 8 p. m. it becomes calm and clear. At this season the wind is from the north, as we have mountains to the southwest and northwest of us. Thirty miles north is the Gulf of Luigayen, an arm of the China Sea.

The rain over here is harder than any I have seen in America. Last July we had a steady downpour for ninety-one hours and the river near us rose over 12 feet. At that point it was 200 yards wide, and at low water 12 feet deep, so you can imagine something as to the rainfall. Most of the country is divided up into little squares by dikes, intended to keep the rice flooded, which they do. It is over such country that we have fought, oftentimes with water and mud knee-deep and many times deeper.

MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Manuel E. Pastrana, Director of the Central Meteorologic-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the Boletin Mensual. An abstract, translated into English measures, is here given, in continuation of the similar tables published in the MONTHLY WEATHER REVIEW since 1896. The barometric means have not been reduced to standard gravity, but this correction will be given at some future date when the pressures are published on our Chart IV.

Mexican data for March, 1900.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
	Feet.	*Inch.*	°*F.*	°*F.*	°*F.*	%	*Inch.*		
Culiacán Rosales (Sinaloa)	112	29.74	90.5	61 7	74.5	58	0.99	n. e.	.....
Durango (Seminario)	6,243	24.01	82.4	36.0	59.5	52	1.40	sw.	w.
Leon (Guanajuato)	5,934	24.28	83.1	41.2	62.1	47	0.74	ssw.	sw.
Merida	50	29.94	102.6	54.0	77.2	59	1.65	se.	n.
Mexico (Obs. Cent.)	7,472	23.04	78.8	39.6	60.6	45	0.63	nw.	sw.
Morelia (Seminario)	6,401	23.96	78.1	43.7	61.5	55	1.17	s.	wsw.
Puebla (Col. Cat.)	7,112	23.86	78.4	41.0	63.5	49	0.01	e.	sw.
Puebla (Col. d. Est.)	7,118	23.33	79.7	41.2	62.2	48	0.06	ene.	sw.
Queretaro	6,070	24.19	80.2	44.1	61.9	52	1.31	e.	w.
Saltillo (Col. S. Juan)	5,399	24.74	78.8	37.2	59.4	69	2.65	s.	sw.
San Isidro (Hac. de Guanajuato)	.....	.....	73.4	55.4	.....	.....	1.29	w.	.....
Silao	6,063	24.26	78.4	48.4	64.8	52	0.84	se.	w.
Zacatecas	8,015	22.50	77.0	35.6	53.8	52	2.41	sw.	e., se.

RECENT PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

La Nature. Paris. 28*me Année.*
L. D. La périodicité dans les phénomènes météorologiques. P. 275.
Archives des Sciences Physiques et Naturelles. Génève. 4 *Période. Tome* 9.
Gautier, R. Observations météorologiques faites aux fortifications de Saint-Maurice pendant l'année 1898, résumé. P. 209.
Das Wetter. Berlin. 17 *Jahrg.*
Meinardus, W. Ueber die Methoden der maritimen Klimatologie. (Schluss). P. 49.
Assmann, R. Die Sonnenstrahlung. P. 54.
Petermann's Mitteilungen. Gotha. 46 *Band.*
Stahl, A. F. Teheran und Umgegend, Klima. P. 51.
La Nature. Paris. 28*me Année.*
Plumandon, J. R. L'évolution des cumulus. P. 297.
L'Aerophile. Paris. 8*me Année.*
B. P. Notice sur la télégraphie sans fil au moyen des ondes Hertziennes. P. 33.
Gaea. Leipzig. 36 *Jahrg.*
Klein, H. J. Wetterprognosen auf mehrere Tage und die täglichen Wetterkarten. P. 257.
Ciel et Terre. Bruxelles. 21*me Année.*
Rocquigny, G. de. Les orages en février dans le centre de la France. P. 66.
Sitzungsberichte der kaiserlichen Akademie der Wissenschaften. Berlin. Band. 16.
Ladenburg, A. and Krugel, C. Uber das Krypton. P. 212.
Aeronautical Journal. London. Vol. 4.
—— Lord Rayleigh on "Flight." P. 113.
Smyth, D. M. B. A Theory of Flight. P. 120.
Journal de Physique. Paris. 3me série. Tome 9.
Sagnac, G. Théorie nouvelle de la transmission de la lumière dans les milieux en repos ou en mouvement. P. 177.
Meteorologische Zeitschrift. Wien. Band 17.
Bjerknes, V. Das dynamische Princip der Cirkulationsbewegungen in der Atmosphäre. P. 97.
Bergholz, P. Die Ergebnisse der Beobachtungen der Wolken in Manila in dem internationalen Wolkenjahre. P. 106.
Woeikof, A. Mitteltemperaturen von Ostsibirien. P. 116.
—— Ueber das Hagelschiessen. P. 125.
Polis, P. Ergebnisse der Beobachtungen von Feuchtigkeit und Bewölkung zu Aachen 1873–1897. P. 128.
Trabert, Wilh. Nachträgliche Bemerkung zu dem Referate über die Versuche von Pellat. P. 129.
MacDowall, Alex. B. Gibt es eine zehnjährige Wetterperiode? P. 130.
—— Die Kanonen von Barisal. P. 131.
Hann, J. Resultate der meteorologischen Beobachtungen in British-Nordamerika im Jahre 1898. P. 132.
—— Meteorologische Beobachtungen in Deutsch-Neu Guinea. P. 133.
—— Charles Rabot über Gletscherschwankungen in den arktischen und hochnordischen Gegenden überhaupt. P. 135.
Gruhn, —. Dauer des Sonnenscheins in Meldorf, verglichen mit Hamburg. P. 135.
Hellmann, G. Ueber die Auswerthung der Aufzeichnungen selbstregistrirender Regenmesser.
—— Temperaturmittel für Süd-Afrika. P. 137.
—— Zum Klima des arktischen Nordamerika. P. 139.
—— Hörbarkeit des Schalles in der Luft. P. 139.
Nature. London. Vol. 61.
Aitken, John. Atmospheric Electricity. P. 514.

A PARTIAL EXPLANATION OF SOME OF THE PRINCIPAL OCEAN TIDES.[1]

By R. A. HARRIS, of the United States Coast and Geodetic Survey.

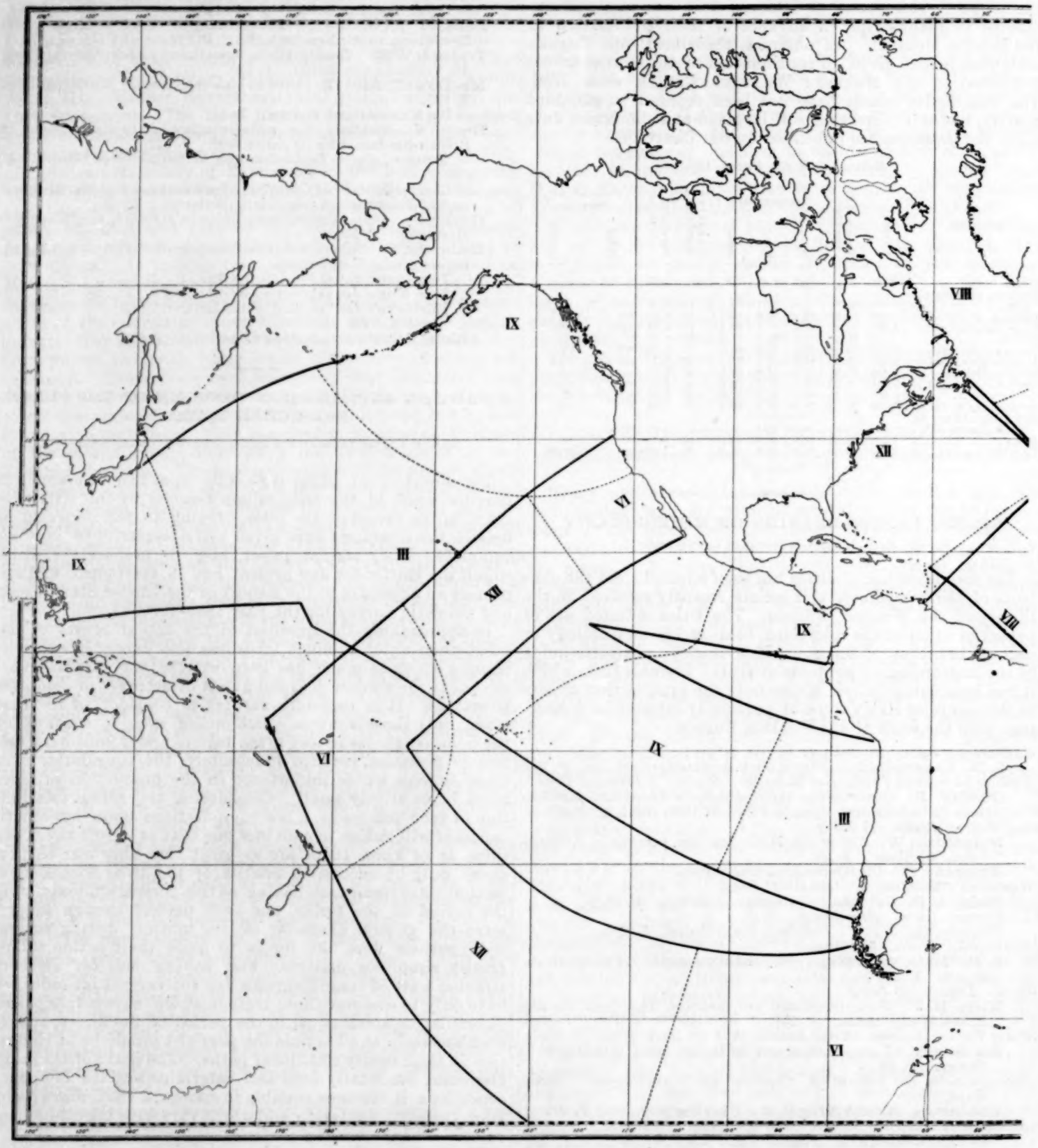
The object of this paper is to state in as brief a manner as possible some of the conclusions reached by the writer respecting the causes of the tides. Owing to the omission of details, the treatment here given will necessarily be very incomplete. The original paper, now in preparation, from which the matter for the present one is abstracted, will appear as an appendix to the Report of the United States Coast and Geodetic Survey for the year 1899–1900.

In approaching the question of the actual causes of the tides, upon which so much labor has been expended and concerning which so much has been written, one may well surmise that the subject does not admit of accurate or complete treatment. It is therefore natural to consider, in the first place, only those sources which would seem to account for the dominant tides in any given region under consideration, and to postpone, perhaps indefinitely, the consideration of those sources whose importance in the production of tides must be relatively small. Considering the actual distribution of land and water, a few computations upon hypothetical cases will suffice to convince one that as a rule the ocean tides, as we know them, are so great that they can be produced only by successive actions of the tidal forces upon oscillating systems each having, as free period, approximately the period of the forces, and each perfect enough to preserve the general character of its motion during several such periods were the forces to cease their action. This greatly simplifies matters. For, having once for all constructed a set of force diagrams for the various latitudes, we have only to discover those regions which have a free period of oscillation about equal to the period of the forces, and to then ascertain at what time the particles should be at elongation in their nearly rectilinear paths. The paths of the particles being practically fixed and determined by the boundary conditions, it becomes possible to disregard the forces arising from the earth's rotation and which vary with the component velocities of the moving particles.

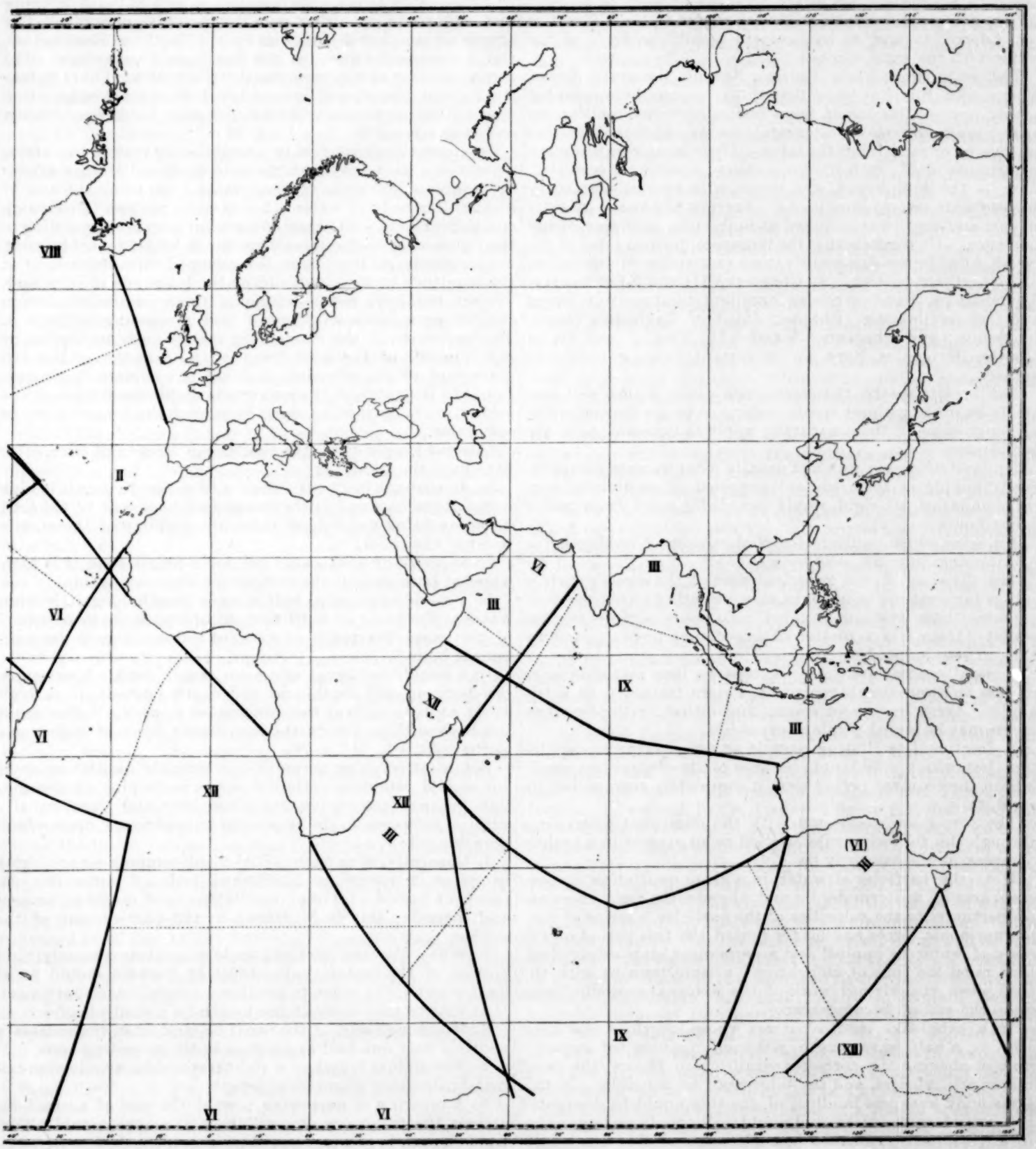
Since some of the natural boundaries of any oceanic region may be indefinite, imperfect, or altogether wanting, serious

[1] Read before the National Academy of Sciences, April 19, 1900.

SYSTEMS FOR THE



SEMIDIURNAL TIDES.



difficulties arise when we attempt to actually mark out areas or systems of areas which shall have the required period of free oscillation, and in which it is possible for the tidal forces to incite a considerable tide. This is believed to be the first attempt to approximately locate areas which seem to account for the principal ocean tides, having regard to the difficulties just referred to, and to connect the possible motions of the water with the tidal forces.

The writings of Plato, Galileo, Newton, Bernoulli, Euler, Young, and Fitz Roy show that these philosophers regarded nearly free oscillations of large bodies of water, oscillations analogous to vibrations of pendulums, as important factors in causing or modifying the tides. Their ideas regarding the requirements of such motions were somewhat confused. Airy is the first writer who treats, with success, stationary waves under several conditions. Ferrel's treatment of tides in east-and-west canals, closed at both ends, is of special importance. He suggests that the large semidiurnal tides of the North Atlantic are due mainly to an east-and-west oscillation of its northern portion. In Chapters VIII and XI of his Hydrodynamics, Lamb gives an excellent treatment of forced and free oscillations. Chapters III–V of Rayleigh's Theory of Sound; and Chapters IX and VII, Vols. I and II, of Routh's Dynamics, have an important bearing upon the subject.

For brevity's sake, the statements which follow will generally be made without special reference to the diurnal wave, although some of them naturally apply to it as well as to the semidiurnal.

By *oscillating area* we shall usually mean an area comparatively simple in form whose free period of oscillation, were its boundaries all rigid, would not differ much from twelve lunar hours.

All areas which oscillate together because of contiguity or overlapping, form an *oscillating system*.

The division of the principal part of the ocean's surface into a few systems is not arbitrary; whether or not we shall suppose these systems divided into more simple regions styled "areas" is a matter of expediency to be decided by the purpose in hand.

Generally areas partially inclosed by land resemble more or less an approximate rectangle, a right trapezoid, or a triangle. Areas having, or resembling, either of the first two forms may be styled *simple* or *canal-like*.

A fractional oscillating area is an area having an oscillation but which could not, because of its dimensions, oscillate in the required period were it completely surrounded by rigid walls.

The forces are connected with the dominant ocean tides through the following rule applied to an area or to a system of areas, as the case may be:

If to the particles of water in a given oscillating system, each area of uniform depth, and wherein the resistances are proportional to the velocities of the particles, a series of simple harmonic forces having for period the free period of the body of water be applied and a permanent state established, then must the time of elongation be simultaneous with the time when the virtual work of the external periodic forces upon the system becomes zero.

In a canal-like landlocked sea whose length is less than $\frac{1}{2}\lambda$, i. e., a half wave length, although too long for approximately obeying the corrected equilibrium theory, the canal theory still applies, and the tides may be sensible. If this same body were less landlocked, the tide would be dissipated to a considerable extent, and would no longer be as large as before. Such cases can then be neglected, and only areas quite close to $\frac{1}{2}\lambda$ (or a multiple of it) in (virtual) length need be considered. Hence, according to the above rule, the times of elongation for the dominant tides of the ocean can not depart much from the time when the virtual work upon the system becomes zero.

Representing the semidaily tidal forces at a given latitude by radiating arrows, the extremities will define an ellipse. At the equator the ellipse becomes a straight line running east and west; at either pole it is a vanishing circle. The arrows are numbered clockwise for the Northern Hemisphere, and counter-clockwise for the Southern Hemisphere. The arrow pointing east represents the force three hours before the time of transit and is numbered 9; the arrow pointing west represents the force three hours after the time of transit and is numbered 3.

To apply the above rule to an oscillating system in nature, we imagine the force diagrams to be scattered along the lines of motion of the areas of the system, e. g., along the axis of a canal-like body of water. Let us begin with any Greenwich component hour. The local component hour corresponding to the numbering on the force diagram is found by subtracting the longitude in time from the assumed Greenwich hour if the longitude be west, and adding the longitude if it be east. Project the force arrow belonging to the assumed time in each diagram upon the line of motion passing through it. The aggregate of the elementary masses each multiplied by the intensity of the tidal force in the direction of the displacement of the element, and again by quantity proportional to the value of the maximum displacement (since the oscillation is harmonic), must be zero at the time of high or low water.

In some simple cases the results can be seen at once. We thus have the following:

In an east-and-west canal half a wave length long it is high water at the east end at the component hour 0 or 12, the time meridian being understood to be the meridian of the middle point of the canal.

In an east-and-west canal one wave length long it is high water at both ends at the component hour —3 or 9.

In a meridional canal half a wave length long it is high water at the south or north end, according as the greater part of the canal lies north or south of the equator, at the component hour 3.

In a meridional canal one wave length long, whose center lies between 45° south and 45° north latitude, it is high water at both ends at the component hour 9; if the center lies beyond these limits, the component hour of high water at the ends is 3.

Before attempting to point out possible oscillating areas one should establish certain lemmas pertaining to the motion in question. A few are given here, and these usually without reference to the reasoning or experience upon which they depend:

1. Generally, with such initial displacements as are likely to occur in nature, a landlocked body of water has one (proper) period of (free) oscillation, and perhaps several such periods; this is evidenced by the phenomenon of the seiches.

2. When the two straight ends constitute the only rigid portion of the boundary, the width of the area should be at least about $\frac{1}{4}\lambda$ in order to produce a sensible stationary wave. It should be still wider if the length be a multiple of $\frac{1}{2}\lambda$.

3. If one side wall of the canal be land, then the necessary width is only one-half as great as in the preceding case.

4. The virtual length of a right trapezoidal area is approximately its mean geometrical length.

5. A tapering or narrowing toward the end of a canal increases the frequency of oscillation, i. e., the actual or extreme length is greater than the virtual length, $\frac{1}{2}\lambda$.

6. A broadening at both ends decreases the frequency of oscillation, i. e., the actual or extreme length is less than the virtual length, $\frac{1}{2}\lambda$.

7. If an oscillation is caused by two opposing straight walls of different lengths, the rise and fall upon the longer will not be confined to the region lying opposite the shorter wall, but will extend some distance beyond.

8. Suppose a stationary oscillation to exist in a canal communicating with a tided sea; let the length of the canal lie between 0 and $\frac{1}{4}\lambda$, then at the time of high water outside it is high water throughout the canal (e. g., many Alaskan canals). If the length lie between $\frac{1}{4}\lambda$ and $\frac{3}{4}\lambda$, it is low water for a distance of $\frac{1}{4}\lambda$ from the head at the time it is high water outside (e. g., Irish Sea, node at Courtown; English Channel, node at Christchurch). If the length be equal or nearly equal to $\frac{1}{4}\lambda$, then the horizontal motion at the mouth, instead of the vertical motion, determines the time of tide within. This tide will be three hours later than the tide outside (e. g., the Gulf of Maine).

9. Whenever a rise and fall apparently necessitates a discontinuity in height, as at an incomplete boundary, a wave will generally be propagated outward, with velocity due to depth, from the discontinuity; or a dependent (stationary) oscillation will be set up in and beyond the openings.

10. If we can see that a reflected wave must travel in a direction nearly opposite to that of the direct wave, then there must result a more or less considerable stationary wave dependent upon the degree or amount of the reflection.

11. A good reflection occurs where the cross section changes much within a small fraction of a wave length.

12. If the region adjacent to an oscillating area consist of a bay or gulf, with numerous branching arms of different dimensions, and if it has various depths or has openings into other bodies of water, the wave will be almost wholly progressive, at least for a considerable distance up. For no large regular reflected wave will return resembling the direct wave as it entered.

13. In a strait, not too short, connecting the ocean with a sea which has neither tides of its own nor tides induced from without, the tide wave is stationary in its character.

14. In estimating the time of high water of a loop of a stationary wave having a broken boundary we should consider the tide at points situated some distance within the boundary; that is, not too near the openings. As the openings are approached the time becomes later, supposing the wave to be freely transmitted beyond, either into an infinite sea or into one which does not reflect. The larger the opening the greater this delaying effect. E. g., Cape Horn, Iceland Channel, Baffin Bay, southwestern Africa, and off Senegambia.

15. For an island situated in an oscillating area, but not too near a nodal line, it may be high or low water upon the side facing the nodal line earlier than in the sea surrounding the island. Similarly, for a cape extending far into the area. E. g., Kahului, Maui Island, Hawaii; Apia, Samoan Islands; Cape Farewell, Greenland.

The principal semidaily movements of the oceans are here supposed to be due to the following systems which are outlined upon the accompanying chart of the world (pages 104 and 105). Along the boundaries the rise and fall may be little or much, all depending upon the case considered. The Roman numerals indicate, unless otherwise stated, the cotidal hours; i. e., the Greenwich lunar times of the semidaily high water. The systems may be designated thus:

1. North Atlantic; 2. South Atlantic; 3. North Pacific; 4. South Pacific; 5. North Indian; 6. South Indian; 7. South Australian (solar).

The North Atlantic system is in the form of a broad band extending from the northeastern coast of Brazil northeasterly $\frac{1}{2}\lambda$, thence northwesterly $\frac{1}{2}\lambda$ to Greenland and Baffin Bay. According to this the range of tide should be especially great off Morocco and Portugal. The cotidal hour at either end should be VIII, and for the angle it should be II. These statements agree fairly well with observation, if we keep in mind lemmas 4, 8, 9, and 14. The tides of northern Portugal, Spain, and France (and therefore for Great Britain), are increased by the fact that this continental coast line in a general way opposes the American coast extending from Newfoundland to Cape Farewell by way of Davis Strait, the distance between the two coasts being about $\frac{1}{2}\lambda$.

The South Atlantic system bears a fanciful resemblance to a branching tree, the trunk very broad and $\frac{1}{2}\lambda$ in length extending from the Antarctic Continent to about latitude 27° S. One branch extends northeasterly $\frac{1}{2}\lambda$ to Baluchistan and India; another branch extends northwesterly λ to the Atlantic coast of the United States; a third branch extends about west-northwest $\frac{1}{2}\lambda$ to the eastern coast of Brazil.

Three of the nodal lines are capable of some verification by observation; one sets out from near Guadeloupe Island, another passes near Ascension, another we suppose to pass north of Bouvet Island. For the Antarctic Continent, the coast of Baluchistan (save for the effect of the Indian systems), and Brazil, the cotidal hour should be VI. For the vicinity of South Africa (save for the effect of the South Indian system), and for the east coast of the United States, the hour should be XII. These remarks are in fair accord with observation, bearing in mind lemmas 4, 8, 9, and 14; but no observations have yet been made upon the Antarctic Continent.

The North Pacific system consists of two parts; a triangular region between North America and Asia, and a trapezoidal one extending from the southern side of the triangle to the coast of Chile, a distance about equal to λ. The acute angles of the triangle fall at Colombia and the Philippine Islands; the obtuse angle at Alaska. If regarded as consisting of two right triangles, the right angles may be supposed to fall south of the Hawaiian Islands. According to the theory of the oscillation of a plane right triangle whose oblique angles are 30° and 60°, the rise and fall at these angles should be three times as great as that at the right angle. The nodal lines divide the hypotenuse into three equal parts. The magnitude of the tide of the North Pacific has been found from observation to vary somewhat in accordance with this scheme. The cotidal hours for the entire system (triangles and trapezoid together) is not far from III and IX as indicated on the chart. This agrees fairly well with observation.

The South Pacific system comprises a belt extending from southern Chile and Graham Land westerly and northwesterly a distance nearly equal to λ, thence northeasterly a distance nearly equal to λ to the coast of southern and Lower California. If we add to the L-shaped figure just described the space inclosed between it and the American coast, we have, roughly speaking, a sector of a circle. The free period of a circular sector is obtained by using for λ about 0.90 of the radius. The two nodal circles have for radii 0.34 and 0.79 of the radius of the sector. The rise and fall at the center of a circle should be more than thrice that at the circumference. While it is not probable that the sector is perfect enough to be very satisfactory, it seems likely that it does modify the positions of the nodal lines of the L-shaped figure and lengthen its period of oscillation; also that it helps to explain the considerable range of tide north of New Zealand. The cotidal hour for the extremities and angles of the L should be VI and this is indicated by observation. Between the two nodal lines (or circles), other causes aside, the hour should be XII. Observation seems to point to this in a general way.

The North Indian system consists of a simple or canal-like area extending from the northwestern coast of Australia, a distance λ to the coast of Somali and Arabia. By theory, the cotidal line at either end should be III, and between the nodal lines it should be IX. Moreover the Bay of Bengal being a dependent fractional area whose length lies between

$\frac{1}{4}\lambda$ and $\frac{1}{2}\lambda$, the cotidal hour above the nodal line should, by lemma 8, be III. These requirements are in general accord with observation.

The South Indian system consists of a simple area extending from the south coast of Australia southwesterly $\frac{1}{2}\lambda$ to where it is supported by the Antartic Continent; thence northwesterly $\frac{1}{2}\lambda$ to Madagascar and South Africa. The cotidal hour, at either end, should be III. Moreover the nodal line falling near Cape Leeuwin prevents there being any sensible semidiurnal tide at Freemantle on the western coast. These statements accord well with observation. It remains to be observed whether or not the cotidal hour where this area rests against the Antartic Continent is IX.

The South Australian system consists of a simple area extending from the Antartic Continent, a distance of about $\frac{1}{2}\lambda$ (solar) to the south coast of Australia. The solar cotidal hour for the north end should be VI and for the south end XII. Observations at Port Adelaide show that the solar wave is there large, and that the age of the tide is considerable as this theory would imply. But there is need of more information about the tides along this coast of Australia.

In comparing the above schemes with the results of observation, particular attention should be paid to the cotidal lines shown in Berghaus' Physikalischer Atlas (1892) and to the results of harmonic analyses, rather than to the older cotidal charts.

NOTES BY THE EDITOR.

THE MEASUREMENT OF RADIANT HEAT.

The Editor frequently receives suggestions or inquiries relative to methods of measuring the heat received by the earth from the sun. This is undoubtedly the most important and fundamental problem of meteorology; the solar heat is to the atmosphere what the fire is to the steam engine, and the time will come when mathematicians and physicists will be able to give a full account of the work done by this source of energy. Perhaps the first apparatus that gave any idea of the amount of heat received from the sun was that invented by Sir John Herschel and called an actinometer. This was improved upon by Pouillet, whose pyrheliometer has long been a standard method of measuring solar heat. During recent years different forms of improved apparatus have been developed by Crova, Violle, Maurer, Chwolson, and, perhaps best of all, by Knut Angström, of Upsala. In all of these it is clearly recognized that the intensity of radiation, namely, the quantity of heat received per square unit per minute of time, is not indicated by any of the numerous forms of apparatus in which a thermometer exposed to the sunshine becomes heated to some high but stationary temperature. This so-called static method of measurement must be replaced by the so-called dynamic method in which the thermometer or its equivalent is exposed to the sunshine and then completely shaded from it alternately several times, so that we may measure the rate of heating under the influence of all sources of heat, including the sunshine, and again the rate under the influence of all sources except sunshine.

As Angström's apparatus is to be recommended, we submit the following description for the guidance of our correspondents.

In Angström's electrical compensation pyrheliometer, as described by him in 1893, and again in 1899 (Wiedemann Annalen, vol. 67, page 633–648) we have, after continued use for several years, an instrument adapted to a wide range of work. It consists of two thin exactly similar and equivalent metal strips, each blackened on one side. One of these is exposedto the radiation that is to be measured, the second is thoroughly protected from this and other obnoxious radiations but is warmed by the passage of an electrical current. If the electrical current is so regulated that both metal strips are equally warmed, then the quantity of heat given to the first by radiation is equal to that produced in the second by the electric current; this equality in the temperatures is determined by means of thermo-electric elements attached to the back of each strip. If q is the energy of radiation per second, per square centimeter, expressed in gram calories, b the breadth of the metal strip, a the power of absorption per unit length of the strip, on its lampblack side, r the resistance of the unit length of the strip to the electric current, i the intensity of the electric compensation current, then we have the relation $b\ a\ q = ri^2/4.18$, whence we obtain the desired energy of radiation in gram calories $q = ri^2/4.18\ b\ a$ in gram calories per second per square centimeter, or $q = 60\ ri^2/4.18\ ba$ in gram calories per minute per square centimeter. By this method we avoid any correction for radiation, convection, or reduction, since these sources of error are assumed to be the same for both strips on account of their equality as to size and temperature. We also need to determine the constants r b and a only once; each determination of the radiation needs only one observation of the intensity of the current, i, in order to obtain the radiation in absolute measure. As r varies slightly with temperature this variation must also enter into the calculation. The two similar metal strips must, of course, be prepared with the greatest care. The blackening of one side of each strip gives to the edges a slight roughness so that an error of 0.01 mm. in the width can scarcely be avoided; this introduces an uncertainty of one-half of one per cent in the results by the apparatus used by Angström. The thermo-electric element is at the back of the metal strips. In order to secure symmetry in the radiation from the rear surface the backs of the strips are covered with black varnish. The fronts are covered with lampblack laid over a thin deposit of zink and platinum chloride. The resistance of the strips to electric currents is determined by the use of Lippman's capillary electrometer. The most important and difficult constant to determine is the power of the lampblack side of the strip to absorb radiant heat. Angström's investigations show: (*a*) That the absorptive power of platinum black is only slightly increased by covering it with lampblack, but is more uniform than lampblack for different wave lengths. (*b*) The surface that has this double covering has an absorptive power that is slightly selective in that it increases with the increase of wave length. (*c*) Its average absorptive power for solar radiation increases from 98.3 to 98.8 per cent with the increase in the thickness of the layer of lampblack. (*d*) If we assume the absorptive power of such surfaces to be the same for all wave lengths and equal to 98.5 per cent, then the error thereby introduced into the determination of the intensity of the radiation would not exceed one-half per cent. It is best to use two different galvanometers for the temperature equality and for the current intensity, respectively.

Laboratory experiments show that different instruments give results that agree closely, and do not change with time, and that those with the compensation pyrheliometer are accurate to within one-half of one per cent. In 1895 and 1896 Professor Angström determined the absolute intensity of the solar radiation by observations with a special light and portable apparatus on the summit of the Peak of Teneriffe. The full report of this important work has not been published, but from

the preliminary notice it appears that his apparatus has given an important addition to our knowledge of the solar radiation and of the atmospheric absorption at that place. This portable compensation pyrheliometer, with rheostat, small galvanometer, electro-dynamometer, and Leclanche cell, packed in a box 16 inches high, 10 inches wide, and 5 inches deep, weighs, with its tripod, 15 pounds, and is so arranged that it can be set up for use in a very few minutes. Angström's apparatus is equally applicable to the measurement of the radiation from very feeble sources of heat, such as a lamp or a warm block of stone or metal, and is peculiarly valuable as a means of determining the constants of the bolometer or thermopile.

THE USE OF THE DIVINING ROD IN THE SEARCH FOR WATER.

According to the Scientific American for April 7, 1900, a commission has been appointed in France to study all apparatus and methods employed by sorcerers, water seers, and wizards, who use the divining rod, mineral rod, exploring pendulums, hydroscopic compasses, and the other instruments which go by a host of other fanciful names. The French engineer, M. Borthier de Rollière, is the president of the commission. He will procure divining rods of all kinds, including books, reviews, journals, reports of experiments, together with the names and addresses of the inventors of the alleged devices. All the facts and documents may be sent to M. de Rollière, care of Cosmos, 8 Rue François Premier, Paris, France. It is to be hoped that the findings of this commission will, once for all, settle the question of the divining rod, not only for the discovery of water, but also minerals. In England, particularly, the water diviner plies his lucrative profession without legal interference, and strange to say, his dupes are often town authorities. The whole business is akin to that of the fortune teller, the spiritualist, or any other charlatan, and it is strange that the exponents of such systems are allowed to pursue their avocations undisturbed by fear of prosecution. At present the victims are the only ones punished.

TIDES IN THE OCEAN AND THE ATMOSPHERE.

The Editor has from time to time received requests for a satisfactory popular explanation of the manner in which the attractions of the sun and moon produce tides in the ocean, and why it is that similar gravitational tides in the earth's atmosphere are not observed. Such an explanation has been in manuscript for several years, undergoing the emendations of critics who are familiar with the subject, and will, we hope, when published, satisfy the desires of our correspondents.

Of late years special attention has been given by eminent meteorologists and physicists to the proper explanation of the periodic variations in atmospheric or barometric pressure, known as the diurnal, simidiurnal, and terdiurnal periods. It seems to be agreed that these do not owe their origin to any action of solar or lunar gravitation, but that they may be the result of solar heat which expands the lower atmosphere and maintains a so-called diurnal wave of temperature in the atmosphere which gives rise to a wave of elastic pressure. Such a pressure wave would run around the earth in twelve hours, if the average temperature of the air were —5° C., whereas the temperature wave goes round once in twenty-four hours. Therefore, a stationary free pressure wave would be maintained by the forced temperature wave and produce both diurnal and semidurnal barometric oscillations. If the temperature of the atmosphere were higher than at present the rate of wave progress, for the free wave, would be less than now, and there might be a temperature at which the diurnal and semidiurnal oscillations would be much greater than at present.

When we study the geographical distribution of the barometric oscillations we find them varying with latitude and longitude, and especially with the continental or oceanic position of the stations. This is plausibly due to the fact that wave progress varies with temperature and pressure, but especially with the depth of the oscillating liquid. In this respect there may be much analogy between the motions of limited portions of the atmosphere and limited portions of the ocean. On a preceding page we publish a memoir by Mr. Rollin A. Harris, of the Tidal Division of the United States Coast and Geodetic Survey, in which he shows how local oscillations of restricted portions of the ocean, similar to the seiches of the Swiss lakes, can affect the general oceanic tidal wave and produce the actual tides that are of importance to navigators, while the principal tide in mid-ocean is comparatively small. The memoir of Mr. Harris is worthy of consideration by those engaged in studying periodic barometric oscillations.

SOLAR SPOTS AND TERRESTRIAL PHENOMENA.

According to an article by Dr. J. Halm, published in Nature March 8, 1900, it may be possible that the sun spots are an index to the existence of what may be called cosmic forces that have to do, not only with the magnetic storms and the aurora on the earth, but with minute disturbances in the annual motion of the earth around the sun. As is well known the solar spots had a minimum near the middle of the eighteenth century. Since that time the eleven-year periods have been well marked, but the intervals of minima and maxima have varied considerably; there was a high maximum in 1783, a low minimum in 1816, a high maximum in 1838, a moderate minimum in 1861, a small maximum, 1873, and a low minimum in 1888. By comparing the irregular changes in the obliquity of the earth's orbit with the curve of sun spots Dr. Halm finds three maxima and minima, viz, those of 1780, 1815, and 1840, and perhaps other smaller ones, clearly recognizable in both curves, and he states that after taking account of this new disturbing force, due to solar spot activity, the observed values of the mean obliquity are brought into entire agreement with the deductions of planetary theory based on Newton's law of gravitation. He adds that exactly the same peculiarities appear in the variations of all the other elements of the motion of the earth; they all show well-marked periodic fluctuations closely agreeing with those of the great spot period. This connection suggests to him that this solar force, which thus seems to modify the law of universal gravitation and the action of the sun upon the ellipsoidal excess of the earth's mass, may also affect the latitudes of places on the earth, that is to say, the position of the earth's axis within the earth. The recent investigations of Chandler into the variations of latitude when compared by Dr. Halm with the sun spot curve show that—

> The radius of the circle described by the pole of instantaneous rotation is greatest at times of sun spot minima and smallest at times of maxima. This correspondence holds true for the whole interval of sixty years now covered by Dr. Chandler's investigations * * * the latitude phenomena lagged behind the spot curve by about 1.5 years. * * * Sir Norman Lockyer discovered that a similar lag can be traced in the curves representing the changes in the lines widened in sun spot spectra during a spot cycle; the maxima and minima of the spectroscopic curves, so far as the observations go, show a perfect synchronism with those of the curve of latitude variation.

Dr. Halm says:

> We are, it seems to me, fairly warranted in assuming the force acting in such a peculiar way on the motion of the terrestrial pole to be

identical with that which exerts its influence on the secular variations. As regards the nature and origin of this force, there is a wide field for speculation.

The Editor is not yet prepared to recognize the force of the demonstrations that have been adduced by Dr. Halm. Coincidences between sun spot frequency and various other phenomena have been made the basis of innumerable memoirs and have led to a host of most suggestive hypotheses as to the connections that must, or at least may, exist between most diverse phenomena within the solar system. As we know nothing about the nature of the force of gravitation it is perfectly proper for us in our ignorance to acknowledge that it is a plausible hypothesis that gravitation may be affected by the same cause that produces the sun spots and may vary simultaneously with them. But in order to give this hypothesis a satisfactory basis, we need either better astronomical work or a profounder insight into the interaction of the physical ether and the ordinary molecules of matter. We need to know something more as to what sun spots are and what causes them or what is that physical connection between the sun and the earth by virtue of which we receive not only light and heat, but chemical and electrical influence. After many centuries philosophers discovered how the ocean tides are caused by the solar and lunar gravitation. Clerk Maxwell made the profound suggestion that electrical and magnetic phenomena might be traced back to the so-called viscous tides and strains within the earth's crust; recent electricians seem to have shown that the electrified condition of the upper air is due to the chemical action of the solar radiation. There is reason to expect further progress in this direction and it will be proper for us to publish in the next MONTHLY WEATHER REVIEW the views advocated by Prof. Ernest W. Brown as to the nature of the sun spots and the plausibility of further connections between the sun and the earth.

THE STORMS OF MARCH, 1888 AND 1900.

The newspapers of New England contain many comparisons between the blizzards of 1888 and 1900, the general conclusion being that the famous storm of the former year still holds its own as the severest of the century. The snowfall varied from 2 to 4 feet in depth during the first two days of the current March; the wind was severe; ordinary roads were entirely blocked, owing to the quantity of snow already on the ground; the railroad service was severely disorganized, but telegraph and telephone service was not affected to so great an extent. The Montpelier papers say:

It takes something more than 3 feet of snow to stagger the managers of the Montpelier and Wells River Railroad, which is one of the hardest in the State to keep open." * * * "The great blizzard of 1888 began in Vermont on Monday morning, March 12, and it continued snowing heavily until Thursday night, while the wind piled it up into immense drifts. There was no communication, even by wire, with New York and Boston for two days and a half, and no trains or mails reached Burlington, Vt., between Monday morning and Wednesday evening.

The storm of March 1, 1900, throughout New England and New York was, in general, slightly inferior to that of 1888. In some cases, however, as in Rochester, the snowfall was decidedly the largest on record. The Rochester Democrat and Chronicle says:

The longest drawn out snowstorm on record for this city was that of January, 1889, when it snowed from the 2d to the 4th of January, but only a small quantity of snow fell. The average snowfall for February is 17 inches; the greatest for one is 90 inches; and thus Rochester in two days got a third as much as the record for the season. But there was on the ground in 1893 29 inches of snow, some 2 or 3 inches more than there is now. During the winter of 1847–8 there was on the ground, it is said, 35 inches of snow about 100 miles southeast of Rochester. Buffalo at one time had 9 feet of snow—the fall for the month. This was in 1879. Arches were constructed of the snow, and people walked under them in the street.

Buffalo and Toledo report that the snowfall was not so heavy as in the storm of 1894, but that the drifts were worse than on that occasion.

At Portland, Me., the maximum easterly wind is said to have occurred about 10:30 to 11:30, March 1, at which time the water in the harbor had risen to a point unequaled in recent years. At this time also vivid flashes of lightning were observed. In general the storm of wind and high water on the coast of Maine was the severest for twenty-five years past. At St. John, N. B., it is called the severest since "the Saxby gale."

From Ohio westward the storm was, in general, the most severe that had been experienced during the past fifteen years.

FROST PROTECTION BY HOT WATER.

According to the Citrograph, published at Redlands, Cal., Mr. E. A. Meacham, of Riverside, has been experimenting on a method of protection against frost by the use of hot water. The plan is to heat water and spread it over the orchard in the usual way of irrigation. The water is heated in a large boiler under which is burning an oil jet. The water is distributed in furrows between the trees of the orchard to be protected. Water, which stood at a temperature of 60°, was heated in a short time to 94° F. The cooling of the water, after it had flowed in the furrows, was carefully measured; it was found to have a temperature of 58° at a distance of 20 rods from the boiler, and of 52° at 40 rods distance. While the heated water was flowing a decided amount of vapor rose from it and from the land that was wetted and warmed by it. Mr. Meacham's plant cost about $200, and the cost of operating it is about 60 cents per hour. The observations of temperature were made by Mr. A. G. McAdie, Forecast Official, who has made a full report on the matter which will be published in Weather Bureau Bulletin No. 29. The plant consisted of a 12-horsepower horizontal boiler and a secondary 6-horsepower boiler, which is used to generate the steam that is mixed with the burning oil so as to consume it entirely without smoke. The temperature of the air was about 34°, and the temperature of the unheated water in the open fields about 41°.

THE TOTAL ECLIPSE OF THE SUN MAY 28, 1900.

In the MONTHLY WEATHER REVIEW for September, 1899, will be found an article by Prof. F. H. Bigelow and a chart showing the path of totality as it passes from New Orleans, La., to Norfolk, Va. In addition to the many astronomers who will attend to observations that interest the astronomical world, there will, it is hoped, be some physicists and meteorologists who will look after the important matters that relate to the earth's atmosphere. Having been requested to state what observations are of special interest to meteorology, the Editor would suggest the following:

1. The solar corona consists of a bright interior portion which undoubtedly represents the sun's atmosphere and will be carefully studied by the astronomers. Outside of this are to be seen streamers of great delicacy and sometimes bright isolated spots. The general belief is that these relate to the space outside of the sun and not to the earth's atmosphere, but there is still a possibility that some of these may be due to the reflection of sunlight from particles of vapor or crystals of ice floating in the earth's atmosphere. Any observations that will elucidate the character of the outer corona will interest meteorology. The corona may be sketched by some as seen by the naked eye; by others it may be photographed

with an ordinary camera and sensitive plates; by others the character of the light may be studied by the use of the polariscope or its brightness by the photometer, or its color by some form of colorimeter. In rare cases, it may be that the air will be still enough to allow crystals of ice, or snow, to arrange themselves systematically as they descend toward the earth, in which case delicate coronal streamers will assume symmetrical positions about the sun, very much as in the ordinary halos.

2. The amount of heat received from the sun per minute is measured by some form of pyrheliometer of which the best are those devised by Pouillet, Langley, Crova, Violle, Chwolson and Angström. When such observations are made frequently from sunrise to sunset on any clear day we obtain the coefficient of absorption for the earth's atmosphere and, also, the amount of heat received at the outer surface of the atmosphere, which is, of course, much larger than that received at the ground. But the heat absorbed by the atmosphere, with its dust and moisture, must also be radiated in all directions, so that the earth's surface receives both the direct radiation of the sun and the diffuse radiation from the atmosphere, which latter is a very important item when the whole hemisphere of sky is considered. Now, during the few minutes of totality, when the direct rays are cut off, we have an opportunity of measuring the sum total of the atmospheric radiation and, thus, determining a point that is very important for climatology and agriculture. The same measurement enables us also to calculate the average temperature of the atmosphere during the total eclipse and thus obtain some idea of the thermal disturbance that pervades the atmosphere at that time. The fact that on many occasions, in a very moist air, the reduction of temperature is sufficient to allow the formation of fog or haze or cirrus clouds shows that this thermal disturbance is by no means unimportant.

3. The regular meteorological observations of temperature, cloudiness, and wind generally show a slight change as a solar eclipse advances toward totality. Observations of the barometer do not show any influence. In general these meteorological observations have not yet been utilized to elucidate any important point, still it is well to make hourly observations during the whole day, and 10-minute records during the eclipse, and minute records during the totality, if it seems likely that the records will be utilized for future study. Of course, the barometers and thermometers must be of extreme delicacy in order to catch the fleeting eclipse effect.

4. It is well known that the blue skylight has a peculiarity called polarization that does not belong to the sunlight itself. This polarization is supposed to be the result of the process of reflection by which the blue skylight is formed. Perhaps it is more proper to say that the sky would be perfectly black and the stars would be visible by day as well as by night, were it not for the fact that a minute percentage of sunlight is reflected to us from every atom of dust and vapor and every molecule of gas in the atmosphere. The smallest or finest particles send us the blue light, while the largest send us white light, and intermediate sizes may send us each color of the spectrum, respectively. The blue light from points in the sky at right angles to the sunlight is almost perfectly polarized, but being mixed with other light from larger particles the resulting mixture is neither perfectly blue nor perfectly polarized. The percentage of polarized light indicates, approximately, the quantity of small particles, or haze, that exist in the line of sight. The observations of polarization of skylight should undoubtedly form a prominent part of the work of every well equipped meteorological observatory, and they may, eventually, be found to be of sufficient practical importance to demand attention at every regular Weather Bureau station. During an eclipse of the sun we have an opportunity of examining whether the percentage of polarization varies with the varying total light from the sun. There is no known reason why it should be so, but if it is found to be the case, then, certainly we must be stimulated to further investigations.

5. During totality observers have frequently noticed, when looking at a uniform surface of wall or ground, that little shadows appear to flicker or move rapidly over the surface. Sometimes these are described as shadow bands, at other times they are bright and dark spots of lenticular shape moving in parallel lines, and with the speed of from 5 to 20 feet per second. Some excellent suggestions as to the observation of these shadow bands have been made by Prof. R. W. Wood of the Physical Laboratory of the University of Madison, Wis., and we copy the following from Science of April 27.

They can be observed to the best advantage by laying a large piece of white cloth on the ground. * * * They move quite slowly for the minute before and after totality. * * * They move in one direction before the eclipse and in the opposite direction after. * * * The only half-way plausible explanation that I have ever heard offered for the shadow bands is that they may be due to striæ in our atmosphere. This would bring them under the head of the scintillation phenomena, treated of somewhat extensively in advanced works on optics, but I am unable to see how any such regular and symmetrical distribution of light and shade can result in this way. That the distance between the bands varies on different occasions lends some plausibility to this explanation, but it is not impossible that the width of the bands is a function of the location of the point of observation, that is to say, of its distance from the center of the eclipse track. This can only be determined by numerous and extensive observations covering a wide tract of country, and it is to secure as many data as possible on this subject that I desire to secure the cooperation of all who are interested in the subject. Observations just outside of, and just within the track of totality will be of especial interest. The observations can be made without any apparatus, and as the bands are not visible during totality their observation will not inconvenience any who are more interested in the spectacular than in the scientific side. At the end of this article I shall outline, as clearly as possible, just how the observations should be made and what data recorded. It has occurred to me that the stroboscopic disc may be of use in determining the cause of the bands. If a source of light produces in any way moving bands of light and shade, it is obvious that if the eye be directed toward the source it will receive more light from the source while a bright band sweeps across it, than during the transit of a dark band. If the alterations are not too rapid a fluctuation in the brilliancy of the source should be observed.

As a matter of fact, citing a special case, the bands are about 3 inches wide, and move with a velocity of about 10 feet per second. This means that 40 bands cross the eye every second, too many to cause any flickering effect. By means of a stroboscopic disc, which is merely a circle of cardboard with equidistant radial slits arranged to be rotated at varying speeds, it is possible to keep the eye in a dark or light band as long as we choose.

Suppose we are looking at the source of light through the slits of the revolving disc, and suppose that the speed of rotation is such that the slits cross the eye at the same rate that the dark and light bands do. This is practically keeping the eye continually in a dark or light band. If the rotation is a little faster or a little slower, the slits will alternately get into, and out of step with the bands, and the eye will be in a bright band one moment and in a dark one the next. In this way we may make the speed of the fluctuations as slow as we please, and if we look at the sun's crescent through such a device we may possibly detect a flickering in whatever part of the source of light is operative in producing the bands. The disc should be about a foot in diameter with about 8 slits in it, distributed uniformly. I should advise that 3 or 4 concentric rings of slits of different width be made, the eye being moved from one to another. In this way the apparent brilliancy of the sun can be varied at will, which would increase the chances of detecting the flickering if it existed. The location of the flickering is to be carefully noted, that is, whether it is of a portion, or the whole of the crescent, or whether it is in the air close to the edge of the sun's limb. The disc can be rotated by hand by means of a whirling table, to be found in every physical laboratory. This simple arrangement will, I think, be found more satisfactory than a more complicated rotator, as the speed is more immediately under one's control.

I am planning to use such an arrangement myself, and hope that some of the other eclipse parties can arrange for the simple experiment also. The speed and width of the bands could also be determined by means of the stroboscope. If we receive the bands on a white cloth on which a scale is marked, and view them through the revolving disc, by carefully adjusting the speed of rotation, it is obvious that the bands can be made to appear stationary. Their width can then be accurately determined by counting the number in a given distance, and the speed with which they move calculated, if the speed

of the disc at the moment is recorded. In this way any change in width could be measured.

While these observations can only be made by persons who have had some training in work of this nature, valuable data may be secured by any who are fortunate enough to live within the eclipse belt. I desire to secure, if possible, a complete record of the appearance of the bands over the entire country, together with statements regarding the direction of the wind, condition of the air, etc. The bands can be best observed by spreading a sheet or other large white cloth on the ground. As soon as the moving shadows appear, which will probably be about a minute before totality, lay a lath on the sheet parallel to the shadows, with as great accuracy as possible. Then try to estimate the width of the bands and the velocity with which they are moving, also the direction in which they are going, that is whether from east to west or west to east. The width of the bands can be best determined, I imagine (I have never seen them), by estimating the width of a group, say five or six, or as wide a bunch as the eye can grasp and follow, with certainty as to the number of dark bands in it. A scale for reference, preferably a white board with feet and half-feet marked with strong black lines, will be of assistance. It should be laid perpendicular to the shadows, that is at right angles to the lath. The speed can be estimated by trying to keep up with the moving shadows, and may be recorded as slow walk, fast walk, slow run, etc. Those who are accustomed to counting quarter seconds, can probably make a fair estimate of the speed by noting the time of transit of a band across the sheet. The shadows will disappear at the moment of totality, but will reappear again as soon as the sun's edge emerges from behind the moon. A second lath should be laid on the sheet, parallel to the bands unless their direction is the same, and the same observations repeated, noting whether the direction of motion is reversed. After the eclipse is over, determine the direction of the two laths as accurately as possible with the compass, and measure the angle between them. Note the direction of the wind before and after the eclipse, and record the general atmospheric conditions.

Tabulate the data as follows:

BEFORE TOTALITY.

1.—Direction of the bands.
2.—Width of bands. (Give all data, that is number of dark bands in given width of the system.)
3.—Estimated speed. State how estimated.
4.—Direction of motion. Whether from east to west, or west to east.
5.—General appearance. Whether sharp or lazy, whether contrast between light and shadow is considerable. If possible estimate relative intensity of illumination in dark and light areas.
6.—Direction of wind. Temperature and general atmospheric conditions.

AFTER TOTALITY.

Repetition of the above.
Actual angle between the laths.
General remarks and location of point of observation.
Reports should be sent to Prof. R. W. Wood, Physical Laboratory of the University of Wisconsin, Madison, Wis.

STATIONS OF THE MEXICAN TELEGRAPH COMPANY.

In the March number of the Texas Climate and Crop Bulletin, Mr. I. M. Cline, Local Forecast Official and Section Director, publishes the monthly summaries for the three regular stations of the Mexican Telegraph Company, viz, Coatzacoalcos, Tampico, and Vera Cruz. The apparatus at these stations has been carefully established by Dr. Cline. The stations are maintained entirely at the expense of the telegraph company, and as they are quite independent of the official Mexican system conducted by the superintendent of the state telegraphs, it is proper that the records should be published by the Weather Bureau. Observations are daily sent by cable from these three stations to Galveston, and therefore, appear in the regular daily bulletins and charts published at Washington and elsewhere. These accurate observations, so far south on the Gulf coast, combined with those at Merida, give us a very comprehensive view of atmospheric conditions over the Gulf of Mexico when northers or hurricanes prevail, and the Weather Bureau is greatly indebted to the Mexican Telegraph Company for its hearty cooperation in this matter.

INFLUENCE OF THE WIND AND OF RYTHMIC GUSTS ON THE LEVEL OF LAKE ERIE.

In the MONTHLY WEATHER REVIEW for April, 1898, page 164, the Editor has calculated the outflow of the Great Lakes into the St. Lawrence River, and has shown the need of further data relative to the rainfall and evaporation. Similar calculations, as revised in the light of the most recent data, have lately been published by the United States Board of Engineers on Deep Waterways in its preliminary report on the regulation of the level of Lake Erie (House Doc. No. 200, Fifty-sixth Congress, first session). In the course of this report it is shown that a serious source of irregularity affecting the navigation of the lakes is the great variation of level at the outlet and inlet of each lake due to the influence of the wind. On this point the report says:

From the head of Lake Erie to the islands (about 30 miles) the depth of water is only about 35 feet, and through the channels between the islands the depth is from 25 to 35 feet.

Heavy westerly winds force the water through these passages into the main body of the lake, causing a lowering of the water level at the head of the lake and a corresponding rise at Buffalo, N. Y. The amount of this change of level depends upon the stage of the lake, the velocity and direction of the wind, and the duration of the storm, and in extreme cases, with wind velocity of 60 to 80 miles lasting for several hours, the change of level reaches 6 to 7 feet at each end of the lake.

The change of level at Cleveland, Ohio, is generally less than one foot, showing that the wind effect is mostly at the two ends of the lake, and is due to the depth of water being so small that return currents are not generated sufficiently to equalize the effect of wind on the surface, until considerable difference in level is produced. The deeper the water the less will be the head necessary to produce any given volume of flow in return current, and it is probable that the elevation to which the water will be raised by wind of any given velocity and duration will be approximately the same, whether the lake be at extreme low or medium high stage when the storm occurs. Storms of sufficient force to change the water level 3 feet or more at the head of the lake are very infrequent, and can only be provided for by making the depth of channels at the head and foot of the lake that amount deeper than through other portions of the waterway system.

The length of time which these changes would be in excess of 1 foot is so small that, with the level of the lake regulated above mean stage, the detention from this cause would not seriously delay commerce.

In this connection the student should consider the influence upon the water level of changes in atmospheric pressure. If the barometer should be higher at one end of the lake than at the other by one-tenth of an inch, and should continue so for a sufficient length of time, it would cause a difference in level of over one inch of water. Barometric differences of several tenths frequently occur. An interesting article upon this subject, by Prof. A. J. Henry, will be found in the MONTHLY WEATHER REVIEW for July, 1899, page 305.

An important cause for the occurrence of differences of level at the two ends of a lake consists, not so much in the temporary differences of barometric pressure or in the temporary influences of gusts of wind, as in the regularity with which these temporary pressures and gusts act upon the water. There is always a natural period which is called the free oscillation of a water surface. By experiment in a basin or tub, we may easily find what depth of water allows of a rythmic oscillation from side to side throughout the whole mass of water. For this depth the water rises on one side of the tub while it is falling on the other side. If we depress the water on one side by blowing upon it, or by pushing it, or by tipping the basin, and do this systematically while the water is itself falling on that side, but do not do it when the water is rising, we quickly observe that we have so timed our artificial impulses as to force the waves to grow larger and larger. This is also the principle elaborated by Dr. R. A. Harris in connection with the local tides of the ocean, and, indeed, of the Great Lakes also. The influences that come from the sun

and moon may be so timed as to bring about great tides in certain parts of the ocean but none in other parts. The barometric waves, shown in Professor Henry's barograms in the REVIEW for July, 1899, seem to have been so timed as to produce and maintain unusual disturbances for a few hours in the surface of the water at Marquette, Mich. Tide gages both on the ocean shores and on the lakes, always show many rythmic oscillations depending on the many possible rates of oscillation of the water immediately surrounding the gage and the deep water off shore. It is generally difficult to trace these disturbances back to their ultimate origin. Sometimes a far distant earthquake shock starts a long slow wave that crosses the ocean and produces a regular series of gentle oscillations at the mouth of a harbor to which the tide gage within the harbor responds as best it can; at other times successive gusts of wind from some special direction are so timed as to set the waters of the harbor itself into rythmic motion. Any source of disturbance, no matter how slight, provided only that it come at the proper intervals, may set the ocean, the atmosphere, or the earth itself, into responsive oscillations.

Illustrations of the power of systematic well-timed impulses are familiar to every one who watches the mechanical operations going on about us. When half a dozen men wish to pull over a great tree, the rope is tied half way up; they set the tree into oscillation; they pull when the tree is coming toward them and cease pulling when it flies back, until finally a few oscillations of rapidly increasing extent bring the monarch low. A few men keeping step as they tramp across a bridge may soon set up dangerous oscillations until the iron rods and beams begin to snap. Two pendulum clocks standing beside each other on a shelf will often so influence each other, through the oscillations that are communicated to the supports, that the pendulums are forced to vibrate in unison. Musical instruments offer many illustrations of resonance due to well-timed rythmic vibrations.

LONG BALLOON VOYAGES.

It is well known that efforts to obtain continuous records at great altitudes for several days, in order to determine the diurnal variations of temperature, pressure, and wind, are great desiderata in meteorology, but are difficult to attain, because neither balloon nor kite can be kept at a uniform altitude for so long a period. The kite has, indeed, been kept in mid-air for two days, but its altitude varies to an important extent during that interval. The captive balloon can be held at a low altitude if the wind is not too strong; for high altitudes we must rely upon the free balloon manned by intelligent aeronauts, who shall so adjust the buoyant gas and the sand ballast as to maintain a fairly uniform altitude. The problem of a journey of several days' duration, at a uniform altitude, has been discussed with much care by Prof. S. A. King, the well-known aeronaut of Philadelphia, Pa., who has always maintained that it should be perfectly feasible for him to journey safely from America to Europe. Of course the expense of preparation has hitherto hindered him from making the attempt. We see by a recent dispatch from Berlin that the German aeronauts are arranging for an experimental trip of this kind about the middle of June. The main object will be to ascertain how long a balloon can be kept in mid-air, in spite of changes of temperature by day and night, which necessitate the ultimate loss of gas and ballast until, finally, the balloon must come to the earth. It is said that the present experimental balloon will contain 300,000 cubic feet of gas and the car will accommodate five persons, provisioned for ten days. These are about the same arrangements that were made for the famous ascension at Minneapolis, Minn., September 12, 1881, when Professor Upton accompanied Professor King, with every convenience for a long voyage. Professor Upton's account of this trip is given in the Annual Report of the Chief Signal Officer for 1882, pages 862–880. Unfortunately, the actual time of ascent was controlled by the authorities of a State fair, who had defrayed all the expenses, and although the balloon remained full of gas from September 12 to September 15, yet no extended journey was accomplished. Subsequent journeys with other balloons have been made by Professor King, with accompanying observers, but we believe the longest time that a balloon has been kept in the air during an actual journey in this country was about fourteen hours, in the aeronautic voyage of Mr. Wise from Buffalo toward New York, N. Y.

WIRELESS TELEGRAPHY.

A paragraph is being circulated in the press to the effect that the Weather Bureau is utilizing the piano wire that is used as kite strings in developing a new method of wireless telegraphy. This ingenious invention of the daily press has been seriously criticized by other newspapers, and it is perhaps worth while to say that the Weather Bureau has as yet done nothing of the kind. Our experience in the use of piano wire for kite string has, indeed, served to show that currents of atmospheric electricity are generally flowing along the wire with sufficient force to prevent its use for wireless telegraphy. In fact, there are so many obstacles to be overcome in the use of the ordinary Marconi system that it is hardly proper to speak of what has been done with other systems until the prospect of thoroughly useful practical results has become a certainty rather than a speculation. Meantime, however, it must be evident to all that the country expects the Weather Bureau to perfect some method of easy communication with vessels at sea, if in any way practicable, in order to warn them of storms and save life and property. We understand that some German steamers are already systematically using the Marconi system to announce their arrival and departure, but it may be easily seen that the great desideratum is a system of wireless telegraphy so simple that it shall commend itself to the use of all nations (like the Morse system of telegraphy and the Bell telephone), so that the same system may be used by all vessels that approach our shores.

STORMS OF SLEET.

We have before referred to the fact that owing to the great destructiveness of sleet in breaking down branches of trees and tender vegetation, telegraph wires, and even roofs of large buildings, it is desirable that there should be a special study of the sleet storms, their statistics, causes, and destructibility. In this connection we call attention to a short article by Hermann von Schrenk on the severe sleet storm of February 27, published in the Transactions of the Academy of Science at St. Louis, Vol. X, No. 5. Mr. von Schrenk gives some estimates and measurements of the amount of ice accumulating upon trees and other objects. Thus, in a storm of February, 1882, a cedar tree ten feet high, with its spreading branches, carried 400 pounds of ice. In a German storm a spruce tree three and a half feet high carried 165 pounds. In a French storm of 1879, described by Jamin, it is stated that a branch weighing 13 grams carried a load of 360 grams of ice. As to the storm of February 27, von Schrenk weighed about 200 branches of a variety of trees to determine what weights of ice the trees were able to withstand. The ratio of the weight of the smaller twigs to the ice incrusting them averaged about 15, but varied from 6 to 35. No estimate is

given by the author as to the total weight carried by any one tree or shrub, but he calls attention to the fact that the twigs on the outside of the tree had more ice to bear than those on the inside, and that the smaller, by resting against each other and the larger ones, caused the whole mass of ice inclosing a tree to freeze together as a unit, so that one branch could not be moved without moving the rest.

The varieties of trees that were most easily injured were the soft maples, the arbor vitæs, pines, honey locusts, oaks, ash, peach, and apple; those least injured were the cypress, the gingko, and the horn beam.

The effect of the strong wind upon a tree is, in general, not so great as that of the sleet. The weight of the latter is a steady downward pressure while the wind acts in temporary gusts and more nearly horizontally. When the wind comes in violent gusts, blowing from above downward, it may be as destructive as sleet.

If a voluntary observer could arrange to catch all the sleet that he can shake down from a heavily laden tree, and add a small percentage for that which melts and is lost to his measurement, he could easily give us some interesting data with regard to the total weight of sleet carried by trees of different heights, ages, and species.

THE COLD WAVES OF JANUARY AND FEBRUARY, 1864.

Mr. J. Nelson Trask, of New Salem, Franklin County, Mass., in response to the Editor's note in the January REVIEW, page 17, writes as follows with reference to the cold wave referred to by Mr. R. M. Harding:

I was on the west shore of Port Royal Island, S. C., where the sharpest turn of temperature began on the afternoon of Friday, January 1, 1864. I had no thermometer, but here are the facts from my record:

New year came in with a sweeping northwester, which drove the recent warm storm and thunder showers out to sea. (That is the way we used to say it.) The day, Friday, was very windy. Saturday morning ice three-fourths of an inch thick in a rain barrel 18 feet above the ground. No thawing through the day. Sunday morning, January 3, ice 1¼ inch thick. During the day the freeze let up; thawed considerably.

February 18 brought another turn; cold with a northeasterly wind; a little fine snow at evening; night cold.

February 19.—Cold, with north wind.

February 20.—Morning calm; cold enough to freeze over the pool northeast of the stable and make ice half an inch thick in the water barrel; later, wind sprang up from the northeast, veering to northwest and west; milder at evening; flowers laid out for their own funerals; orange leaves made to wilt.

February 21.—Frost, but the temperature evidently much higher than yesterday morning. The frost of the 20th seems to have blasted all the orange trees on this, Woodward, place. The live oaks, though by no means killed, are much denuded; the magnolias are as green as ever, so the bays, but the myrtles are losing most of their leaves; oleanders have felt the cold severely, some apparently killed; rosebuds that would have opened within a week were killed; narcissus, daffodil, jonquil fell flat upon the ground. The orange and oleander trees were not killed to the ground, but the limbs were withered down about an arm's length; no fruit and no nosegays next summer from these trees. Creeping blackberries fruited wonderfully.

A BLACK RIVER THAW.

In the northern portion of the State of New York, the Adirondack region, which is famous for its heavy snowfall, is also subject to corresponding severe floods due to the melting snow. The Black River which empties into Lake Ontario at Sacketts Harbor, drains the southwestern quarter of the Adirondack region and the intermediate country to the shore of Lake Ontario, a region that is particularly subject to long snowstorms followed by warm rains. As the thaw and the high water are the almost inevitable consequences of a long snowstorm, the latter is humorously called the "Black River thaw."

SUDDEN DISAPPEARANCE OF ICE IN THE LAKES.

It is often remarked that ice disappears from the Great Lakes most suddenly and unexpectedly. At night-time a vessel may be surrounded in all directions, but by the next morning the ice is all gone without the assistance of any perceptible current. It is popularly said that the ice gets honeycombed and rotten and sinks; but ice being much lighter than water will not sink. The temperature of melting ice is 32° F., while the temperature of the water a little way below the ice is much higher. There is, therefore, a vertical interchanging circulation, the warmer water from below rises and melts the under surface of the ice; the melted ice, having a temperature of 32° F., sinks, but the ice itself does not. When the ice is observed to become honeycombed, it means that the lower warmer water is rising and melting it. A similar effect is, of course, produced by warm rain water. To a certain extent strong, dry winds, by evaporating the surface of the ice, cause it to disappear; if the winds are warm the ice becomes honeycombed and soft, but if the winds are very cold the ice remains firm and hard until it has disappeared. Under the influence of cold northwest winds the surface of the ice remains clear, clean, hard, and cold, so that the blocks and fields maintain their blue color, whereas honeycombed ice is whitish.

BENEFITS AND INJURIES DUE TO STORMS.

We hope that some one will have the patience to make out a balance sheet showing the good and evil done by storms throughout the whole United States. We notice that one of the severest storms, most disastrous in the Eastern States, is said to have been of untold benefit to the ranges of New Mexico and Colorado. The large amount of snow that falls in the mountains may avert a water famine during the coming summer. Again, we often notice that the winds which bring heavy rains to the Pacific coast bring droughts to the interior, and the winds that destroy vessels on the Atlantic coast bring rains to the interior of the Atlantic States. The cold waves that injure the vegetation of the Gulf States dissipate the yellow fever. No matter how much man complains of the weather, it would seem after all to be very satisfactory to the human race in general; it would seem to be a case where man grumbles at the blessings that are showered upon him, and we believe that a careful review of every aspect of the question would tend to make us better content with existing arrangements. Every newspaper paragraph enumerating the injury done by a storm should be paralleled by one enumerating its blessings.

A certain snowstorm is said to have cost the Chicago and Alton Railway Company over $25,000; the wages paid to the snow shovelers, the diminution of freight and passenger business, the extra cost of handling traffic, the spoiling of delicate freight, the double heading of the engines, the expense of the snow plows are all counted as a loss to the railroad; but the farmer welcomes the snow for the good it does to the crops in ground, and the railroad will doubtless find its losses in the winter more than balanced by its gain in business during the summer.

WEATHER BUREAU MEN IN UNIVERSITIES.

Mr. Alexander G. McAdie, Forecast Official, as honorary lecturer in meteorology in the University of California, has delivered a series of four lectures on meteorology at Berkeley, as introductory to scientific work in this department. The titles of his four lectures are: Forecasting the Weather; Lightning; Exploring the Air; Storm Structure.

WATERSPOUT.

The schooner *Metha Nelson*, which arrived February 19 at San Francisco, Cal., from Makaweli, Kauai, Hawaiian Islands, encountered a waterspout on Sunday February 18, when 30 miles northwest of Point Reyes. Captain Rice states that:

On Sunday morning his vessel was pursued by a column of water which emitted flashes of lightning, and was preceded by a thin curling sea. The weather for the preceding twenty-four hours had been a succession of rain squalls, but the sea was moderate and the weather not unusual for this time of the year.

When the spout first appeared it was some distance astern, according to an account given by the mate, and apparently bearing directly down upon the schooner. There was just time to make everything fast when the great swirling mass of water was close astern and towering over the little vessel. Then, by some strange good fortune, it suddenly changed its course and swept by, only catching the spanker boom and carrying it away. The schooner was thrown on her beam ends by the disturbance of the water but soon righted herself and continued on her course.

OBJECTIONABLE METEOROLOGICAL TERMS.

We notice in a newspaper from Ashland, Oreg., the expression "The buran or snow-hurricane of the Pamirs." The accompanying description of the buran is quite correct, and it evidently corresponds very nearly to the blizzard of North America. The blizzard is not merely a cold wind, but it must be accompanied by blinding snow, no matter whether it is falling freshly from the sky or drifting along over the ground. It is tautology to speak of a "snow buran" or a "snow blizzard." The hurricane is not merely a strong wind, but is a revolving wind of the cyclonic type, whereas the winds of the blizzards almost always blow more nearly in straight lines, outward from the region of high pressure. It is perfectly proper to speak of a buran, a blizzard, a typhoon, a West India hurricane, as separate types of storms. The buran is one form of snowstorm, but it is not in any sense a hurricane.

DANGER LINES ON GAGES AND CONTOUR LINES ON CITY MAPS.

In connection with the high water at Albany, N. Y., early in March, the Times-Union of that city says:

The Weather Bureau observer, Mr. A. F. Sims, has what he calls the danger line, and many inquiries were made at the office from merchants along Broadway in regard to the water. Mr. Sims' forecasts came true in regard to the freezing temperatures, and this morning the merchants were praising him for sparing them much trouble. Mr. Sims has a system by which he can tell the merchants of different stores along Broadway how much higher the water will have to come before it will affect their store floors or their boilers. He is keeping a close watch on the river, and as soon as there is any danger of a flood will inform the merchants who are in danger. This system is greatly appreciated, for it saves them much time and worry.

It would seem that if there is available a map of any city showing the contour lines foot by foot, up to the highest water level, it would be convenient for our observers to specify what streets or cellars will be flooded for any given height of water above the danger line.

THE LEGAL VALUE OF WEATHER BUREAU RECORDS.

Very few persons realize how very frequently the records of the Weather Bureau are appealed to by the courts. Prof. H. J. Cox, in charge of the station at Chicago, Ill., states that:

Since the opening of the present term of court, last fall, I have been in court thirty-three times to testify as to the condition of the weather at a particular time and as to what bearing it might have on the case at issue. In addition to these thirty-three cases many cases are settled out of court on the records of the weather department. Such cases are principally damage suits arising from the shipment of perishable goods. Every day we have from eight to ten telephone calls and numerous letters from commission merchants asking as to the weather conditions on particular dates and the claims are usually settled accordingly.

SUDDEN TEMPERATURE CHANGES IN MONTANA.

Mr. C. W. Ling, observer in charge of the Weather Bureau station at Havre, Mont., calls attention to the sudden rise and fall in temperature on March 7 and 8 at that station. The minimum recorded by the thermograph in the early morning of March 6 was about −15° and the general curve for that day had the normal characteristics. On March 7, at 2:45 a. m. seventy-fifth meridian time, there was a sudden rise within three minutes from + 11° to + 42°, where the temperature remained nearly stationary until 12:30 p. m., when it fell in three minutes from + 44° to + 18°, and in twenty minutes more to + 11°. The temperature curve then remained nearly normal until about 5 a. m. of March 8, when it began to rise rapidly, ascending from + 20° to + 40° at 6 a. m.; but in a few hours, viz, at 10:30 a. m., it began falling rapidly, and in one hour and thirty minutes passed from + 43° down to + 9°. The rapid rises on the 7th and 8th were due to the southeast and southwest foehn winds that are so common in this neighborhood; the rapid falls that followed them are said by the observer to have been caused by cold waves. It does not appear that these cold waves always advance far southward. Sometimes they are quite local and may represent the surging north and south of the cold air that covers the lowlands north and east of Havre, which latter station is located about 2,500 feet above sea level.

THE WEATHER OF THE MONTH.

By ALFRED J. HENRY, Professor of Meteorology.

The weather of the current month east of the Rocky Mountains was for the most part cold and disagreeable. In the Gulf States and Florida there was much rain but no abnormally low temperatures. West of the Rocky Mountains it was warmer than usual with less than the normal amount of rain, except on the coasts of Washington and Oregon. Less than the average amount of snow fell in all districts, except the lower Lake region, the upper Missouri Valley, and northern New England. The number of thunderstorms and severe local storms was remarkably small.

PRESSURE.

The distribution of monthly mean pressure is graphically shown on Chart IV, and the numerical values are given in Tables I and II.

Mean pressure was highest, 30.18 inches, in the upper Missouri Valley, whence it diminished to 30.00 inches on the Pacific coast, and to 29.90 over the Gulf of St. Lawrence. As compared with the normal, mean pressure was in excess throughout the eastern two-thirds of the United States by amounts varying from one to seven and eight hundredths of

an inch. West of the Rocky Mountains there was a deficit of about the same amount.

During the first ten days, and again during the closing days of the month, pressure was low throughout the Pacific coast and Plateau regions. Areas of high pressure during those periods generally moved southeastward over the eastern slope of the Rockies or directly eastward by way of the Lake region.

TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

Temperature was above normal in practically all of the districts west of the ninety-fifth meridian and below in the districts to the eastward, save Nova Scotia and southeastern Florida. The negative departures for the current month were not so great as those of the previous month, but covered very much the same extent of territory. The area of positive departures likewise covered the same portions of the country as during the preceding month. A slight eastward movement in both areas was noted. The greatest positive departures in February were in Oregon; in March, in southern Idaho. The greatest negative departures in February were in western Wisconsin; in March, in Lower Michigan and western New York.

In Canada.—Prof. R. F. Stupart says:

The mean temperature of the month was lower than average by 3° to 6° in the Provinces of Quebec and Ontario, the largest departures being in the upper Ottawa Valley and in Nipissing district. In British Columbia and southern Alberta it was higher than average by a corresponding amount, while in Manitoba and the larger portion of the Territories, and also in the Maritime Provinces, it varied from just average to a degree or so either above or below. The difference from average of 6° in Ontario is large, but scarcely as exceptional as many seem to suppose. In March, in the years 1895 and 1896, the mean temperature over the larger portion of the Province was lower than this year, and in 1885 it was very much lower. British Columbia records indicate, however, that a departure from average of 6° in that Province is very exceptional.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	10	31.3	− 1.6	+ 0.7	+ 0.2
Middle Atlantic	12	37.2	− 2.2	− 1.8	− 0.6
South Atlantic	10	52.6	− 1.0	− 5.2	− 1.7
Florida Peninsula	7	63.6	− 1.5	− 6.7	− 2.2
East Gulf	7	57.0	− 1.4	− 7.5	− 2.5
West Gulf	7	57.9	+ 0.1	+ 0.4	+ 0.1
Ohio Valley and Tennessee	12	41.2	− 2.7	− 5.1	− 1.7
Lower Lake	8	26.7	− 5.6	− 5.6	− 1.9
Upper Lake	9	23.2	− 3.4	− 1.1	− 0.4
North Dakota	8	21.1	+ 0.8	+11.4	+ 3.8
Upper Mississippi Valley	11	33.4	− 2.5	− 0.8	− 0.3
Missouri Valley	10	36.4	+ 0.6	+ 6.4	+ 2.1
Northern Slope	7	35.5	+ 3.7	+15.5	+ 5.2
Middle Slope	6	44.3	+ 2.0	+ 8.8	+ 2.9
Southern Slope	6	51.4	+ 1.0	+ 5.9	+ 2.0
Southern Plateau	15	52.5	+ 4.7	+13.5	+ 4.5
Middle Plateau	9	44.4	+ 6.4	+18.8	+ 6.3
Northern Plateau	10	44.0	+ 6.6	+18.6	+ 6.2
North Pacific	9	49.2	+ 3.9	+11.8	+ 3.9
Middle Pacific	5	54.7	+ 2.4	+ 7.2	+ 2.4
South Pacific	4	59.2	+ 3.8	+10.3	+ 3.4

PRECIPITATION.

Precipitation was generally below normal, the notable exceptions being in Florida, the west Gulf States, North Dakota, the north Pacific coast, and the lower Lake region. In no district, however, was the deficiency so great as to work immediate injury to agricultural interests. In the majority of the grain producing States, in the central valleys and on the eastern seaboard the total fall was about 75 per cent of the normal. Monthly totals of over 10 inches were recorded in Florida and Texas and on the north Pacific coast. The precipitation in the Rocky Mountains and Plateau regions was light.

The snowfall of the month east of the Mississippi was not large, except in the Appalachian and lower Lake regions. The fall in the upper Mississippi and upper Missouri valleys was considerably above the average. On the plains and generally throughout the Rocky Mountain and Plateau regions the fall was scant and irregularly distributed.

At the close of the month there was considerable snow on the ground in eastern South Dakota and northern Iowa, in the Upper Peninsula of Michigan, locally throughout northern Ohio, and in northern New England.

In Canada.—Professor Stupart says:

In British Columbia the precipitation was, in most localities, unusually heavy, especially in the lower Fraser Valley, where it ranged between 6 and 10 inches. At Victoria over 2 inches fell between the 9th and 11th, and from 5 to 6 inches in thirty-six hours was reported from Vancouver and New Westminster on the 10th and 11th. In the Northwest Territories and Manitoba the precipitation was, as is usual in March, wholly snow. This, during the first ten days, was fairly heavy in northern Alberta and also in parts of Assiniboia, amounting to 34 inches at Edmonton, 14 inches at Qu'Appelle, and 10 at Medicine Hat. In Manitoba, generally, it was about 7 inches, and in Saskatchewan a somewhat smaller amount. From Ontario eastward a much heavier precipitation occurred in the southern than in the northern portions of the Province. In Ontario it was partly snow and partly rain; in Quebec chiefly snow, and in the Maritime Provinces almost wholly rain. In eastern Nova Scotia the total fall was double the average. The depth of snow on the ground is still considerable in northern Ontario and in Quebec, but all has nearly gone from the Northwest Territories and Manitoba, and also from southern Ontario. Heavy drifts still continue, however, in sheltered places. Ice reports are rather meager, but from those received it is evident that rivers in the Northwest Territories and Manitoba which are not already open soon will be. There is but 10 inches of ice at Battleford.

The total depth of snow for the month, and the amount on the ground at the end of the month are shown by Charts No. VIII and IX, respectively, and the numerical values appear in Table II.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	10	4.80	108	+0.3	+2.9
Middle Atlantic	12	3.58	92	−0.3	−0.7
South Atlantic	10	4.49	100	0.0	−0.3
Florida Peninsula	7	6.47	234	+3.7	+4.9
East Gulf	7	5.43	92	−0.5	+0.2
West Gulf	7	4.05	121	+0.7	−0.3
Ohio Valley and Tennessee	12	2.59	60	−1.7	−3.7
Lower Lake	8	2.93	116	+0.4	+1.5
Upper Lake	9	1.29	62	−0.8	−1.1
North Dakota	8	1.86	117	+0.2	−0.5
Upper Mississippi Valley	11	1.74	78	−0.5	−0.5
Missouri Valley	10	1.32	77	−0.4	−0.7
Northern Slope	7	0.60	75	−0.2	−0.6
Middle Slope	6	0.70	47	−0.8	−1.2
Southern Slope	6	0.73	71	−0.3	−1.3
Southern Plateau	15	0.46	40	−0.7	−2.2
Middle Plateau	9	0.36	25	−1.1	−2.2
Northern Plateau	10	1.08	64	−0.6	−1.7
North Pacific	9	6.34	114	+0.8	−1.5
Middle Pacific	5	2.35	58	−1.7	−4.3
South Pacific	4	1.14	53	−1.0	−5.0

HAIL.

The following are the dates on which hail fell in the respective States:

Arizona, 2, 6, 17, 18, 20, 21, 22, 23. Arkansas, 14, 19. California, 3, 4, 20, 21, 22, 23, 25, 26, 27. Florida, 9. Idaho, 2, 3, 6, 8, 25, 26, 27. Illinois, 1, 27, 28. Indiana, 6, 25, 28. Indian Territory, 6. Kansas, 5, 25, 26. Kentucky, 19.

Louisiana, 15, 16, 18, 19. Michigan, 5, 22. Mississippi, 19. Missouri, 6, 23, 28. Nebraska, 24, 27, 28. Nevada, 2, 21, 23. New Mexico, 21, 22. Ohio, 5, 19, 28, 29. Oregon, 3, 4, 5, 21, 25, 26, 27. Tennessee, 14, 19, 20, 30. Texas, 21, 22, 25, 29. Utah, 4, 5, 23, 26. Washington, 4, 5, 25, 26, 27, 28. West Virginia, 25, 26, 29.

SLEET.

The following are the dates on which sleet fell in the respective States:

Alabama, 15. Arizona, 20. Arkansas, 13, 14. California, 3, 7, 22, 25. Colorado, 4, 5, 22, 23, 24, 26, 27, 28. Connecticut, 1, 6, 15, 16. Delaware, 15, 26, 31. District of Columbia, 16. Georgia, 15. Idaho, 3. Illinois, 4, 5, 6, 18, 25, 27, 28, 29. Indiana, 4, 5, 6, 18, 25, 27, 28, 29, 30. Iowa, 3, 4, 5, 6, 7, 24, 26, 27, 28, 29. Kansas, 3, 4, 5. Kentucky, 1, 2, 28, 30. Louisiana, 15, 16. Maine, 1, 2, 6, 10, 15, 16. Maryland, 8, 15, 16, 25, 26, 29. Massachusetts, 1, 6, 15, 16. Michigan, 5, 6, 9, 17, 18, 19. Minnesota, 5. Mississippi, 15. Missouri, 5, 6, 16, 22, 29, 30. Montana, 3. Nebraska, 3, 4, 5, 6, 7, 14, 27, 28, 29, 30. New Hampshire, 1, 2, 3, 6, 7, 16. New Jersey, 6, 15, 16, 18, 26, 30. New Mexico, 21. New York, 1, 3, 6, 15, 19, 27. North Carolina, 8, 13, 14, 15, 16. North Dakota, 24. Ohio, 1, 4, 5, 6, 25, 26, 28, 29, 30. Oklahoma, 14. Pennsylvania, 1, 5, 6, 15, 16, 26. South Dakota, 26, 27. Tennessee, 4, 22, 30. Texas, 14, 15, 21, 22. Utah, 5, 26. Vermont, 1, 6, 16. Virginia, 1, 8, 9, 11, 14, 15, 16, 25, 29, 30, 31. Washington, 6, 24, 25, 26. West Virginia, 1, 11, 25, 27, 29, 31. Wisconsin 5, 6, 10, 25, 26. Wyoming, 5, 26, 27.

SUNSHINE AND CLOUDINESS.

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographical districts, appear in Table I.

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	4.8	−0.8	Missouri Valley	4.9	−0.7
Middle Atlantic	5.4	−0.1	Northern Slope	5.0	−0.3
South Atlantic	5.2	+0.5	Middle Slope	4.5	+0.1
Florida Peninsula	5.3	+1.3	Southern Slope	5.0	+0.8
East Gulf	5.5	+0.8	Southern Plateau	3.4	+0.4
West Gulf	5.8	+0.6	Middle Plateau	3.7	−1.2
Ohio Valley and Tennessee	6.1	+0.2	Northern Plateau	5.4	−1.1
Lower Lake	6.4	0.0	North Pacific Coast	6.4	−0.2
Upper Lake	6.2	+0.3	Middle Pacific Coast	5.4	+0.4
North Dakota	5.6	+0.1	South Pacific Coast	4.2	−0.3
Upper Mississippi	5.5	0.0			

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table VII, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—Reports of 740 thunderstorms were received during the current month as against 2,125 in 1899 and 703 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 19th, 78; 27th, 69; 24th and 25th, 58; 26th, 56.

Reports were most numerous from: Texas, 67; Florida, 61; Kansas, 59; Nebraska, 57.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, 11th to 19th.

The greatest number of reports were received for the following dates: 29th, 10; 8th and 12th, 8.

Reports were most numerous from New Hampshire, 8; New York, 7; Massachusetts, 5.

In Canada.—Auroras were reported as follows: Father Point, 23d; Quebec, 8th, 23d, 29th; Toronto, 23d; Minnedosa, 2d, 4th, 8th, 19th, 30th; Medicine Hat, 4th, 28th; Banff, 12th; Battleford, 13th, 29th; Barkerville, 12th.

Thunderstorms were reported from Hamilton, Bermuda, on the 12th, 15th, 28th.

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Amarillo, Tex	5	50	w.	Hatteras, N. C.	1	51	se.
Buffalo, N. Y	6	57	w.	Do.	12	50	n.
Do.	7	54	w.	Helena, Mont.	1	58	w.
Do.	17	52	w.	Mount Tamalpais, Cal.	22	51	nw.
Do.	19	51	w.	Do.	27	53	nw.
Do.	20	60	w.	New York, N. Y.	1	56	e.
Carson City, Nev	7	58	w.	Do.	2	60	nw.
Do.	8	56	w.	Do.	3	63	nw.
Do.	25	50	sw.	Do.	7	50	nw.
Do.	26	50	sw.	Do.	28	50	nw.
Chicago, Ill	6	53	sw.	Norfolk, Va	1	55	se.
Denver, Colo	5	51	nw.	Pierre, S. Dak	1	52	nw.
Eastport, Me.	1	54	e.	Point Reyes Lt., Cal.	22	72	nw.
Do.	2	66	e.	Sioux City, Iowa	19	50	nw.
Do.	16	58	s.				

HUMIDITY.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
	%			%	
New England	69	− 6	Missouri Valley	68	− 4
Middle Atlantic	69	− 2	Northern Slope	63	− 3
South Atlantic	75	+ 1	Middle Slope	61	+ 1
Florida Peninsula	80	+ 2	Southern Slope	60	+ 4
East Gulf	70	− 4	Southern Plateau	35	− 5
West Gulf	73	+ 3	Middle Plateau	39	−15
Ohio Valley and Tennessee	71	+ 1	Northern Plateau	65	− 5
Lower Lake	76	0	North Pacific Coast	78	− 2
Upper Lake	80	+ 2	Middle Pacific Coast	75	− 1
North Dakota	79	+ 2	South Pacific Coast	71	− 3
Upper Mississippi	76	+ 5			

DESCRIPTION OF TABLES AND CHARTS.

By ALFRED J. HENRY, Professor of Meteorology.

For description of tables and charts see page 26 of REVIEW for January, 1900.

TABLE 1.—*Climatological data for Weather Bureau Stations, March*, 1900.

Stations.	Elevation of instruments.			Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.										Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.			Wind.				Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Total snowfall.
	Barometer above sea level, feet.	Thermometers above ground.	Anemometer above ground.	Mean actual, 8 a. m.+8 p. m.+2.	Mean reduced.	Departure from normal.	Mean max. + mean min. ÷ 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.					Total.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.				
New England.							31.3	— 1.6											69	4.30	+ 0.3								4.8	
Eastport	76	69	74	29.80	29.90	+ .02	25.8	— 1.9	53	16	35	0	6	19	36	24	19	73	4.97	+ 0.6	11	11,128	w.	66	e.	2	8	13	10	6.1	23.8
Portland, Me.	108	81	89	29.80	29.91	— .01	28.4	— 3.6	54	20	37	4	12	20	28	24	16	63	6.00	+ 2.6	9	7,003	nw.	48	se.	16	18	7	6	3.9	20.1
Northfield	876	15	65	28.98	29.99	+ .01	19.5	— 5.5	46	19	30	—14	13	9	44	17	13	75	4.49	+ 2.1	14	7,787	n.	36	sw.	7	7	14	10	5.6	45.4
Boston	125	115	181	29.82	29.96	+ .02	34.0	— 0.2	59	19	43	7	12	24	34	28	20	61	4.60	+ 0.5	10	10,001	w.	44	s.	16	14	6	11	4.9	7.6
Nantucket	12	43	54	29.96	29.97	+ .02	34.3	— 0.6	51	20	40	13	18	28	21	31	27	76	2.95	— 0.6	13	9,884	nw.	36	s.	1	10	9	12	5.7	1.4
Woods Hole	22	11	57	29.94	29.96	+ .02	33.6	— 1.5	51	16	40	10	12	28	23	30	26	76	3.56	— 1.1	11	13,218	nw.	48	sw.	1	11	7	13	5.4	0.7
Vineyard Haven	.....	20	55	.....	.....	.....	33.8	— 1.2	59	20	44	11	12	28	29	....	....	....	4.05	— 0.4	10	8,179	w.	37	se.	1	14	10	7	4.6	5.2
Block Island	26	11	70	29.94	29.97	+ .02	34.0	— 0.8	52	16	40	12	12	28	23	31	25	69	3.92	— 0.1	13	14,487	nw.	49	ne.	16	12	9	10	4.7	2.2
Narragansett	.....	10	....	.....	.....	.....	33.6	+ 0.3	54	23	43	7	12	24	32	....	....	....	4.27	— 0.3	9	.....	w.	....	.....	...	18	8	5	....	2.5
New Haven	106	117	140	29.87	29.99	+ .01	33.1	— 1.5	58	23	42	7	12	24	25	28	20	60	4.21	0.0	10	7,893	n.	36	se.	1	21	5	5	2.7	5.0
Mid. Atlan. States.							37.2	— 2.2											69	3.58	— 0.3								5.4	
Albany	97	84	113	29.90	30.01	+ .03	27.8	— 4.1	48	23	36	— 8	18	19	33	24	19	72	4.62	+ 2.0	8	7,279	w.	26	s.	19	16	8	7	4.6	22.8
Binghamton	875	79	90	.....	.....	.....	26.0	— 4.8	54	9	35	—11	18	17	36	....	....	....	3.17	0.0	13	6,500	nw.	26	w.	2	6	14	11	6.0	12.2
New York	314	108	346	29.65	30.00	+ .01	35.0	— 1.9	55	7	42	10	18	28	26	30	23	63	3.18	— 0.8	11	14,225	nw.	63	nw.	3	9	16	6	5.3	7.7
Harrisburg	374	94	104	.....	.....	.....	34.4	— 1.8	53	23	42	5	18	27	30	....	....	....	3.00	— 0.5	12	6,895	w.	40	w.	2	9	8	14	5.9	13.2
Philadelphia	117	168	184	29.90	30.03	+ .02	37.4	— 1.7	61	23	46	12	18	29	27	32	26	66	3.13	— 0.1	12	8,892	nw.	32	ne.	15	7	11	13	6.4	5.7
Atlantic City	52	68	76	29.96	30.02	+ .04	36.6	— 1.0	62	23	44	13	18	30	27	33	29	74	2.84	— 1.1	9	10,077	nw.	38	nw.	3	13	11	7	4.9	1.8
Cape May	17	47	51	30.02	30.04	+ .05	37.6	— 1.9	63	23	44	15	12	32	26	34	....	....	3.14	— 1.8	14	7,528	nw.	33	ne.	15	8	13	10	2.7	2.0
Baltimore	133	68	82	29.90	30.03	+ .02	38.6	— 2.9	67	23	47	12	12	30	30	34	28	68	3.17	— 0.9	12	4,340	w.	25	w.	2	4	12	15	6.6	9.5
Washington	112	59	76	29.92	30.04	+ .02	38.8	— 2.5	68	23	48	11	12	30	36	33	26	62	3.07	— 1.1	10	6,664	nw.	36	nw.	21	8	9	14	6.0	15.5
Cape Henry	.....	5	54	.....	.....	.....	44.8	— 0.4	72	6	53	24	22	36	34	....	....	....	5.09	0.0	11	11,754	sw.	46	n.	21	8	12	11	5.8	0.5
Lynchburg	681	83	88	29.28	30.03	— .00	43.8	— 1.4	69	23	54	17	18	34	35	37	31	66	4.35	+ 0.7	12	3,903	nw.	29	nw.	1	11	15	5	5.0	6.7
Norfolk	91	102	111	29.94	30.04	+ .02	45.5	— 1.4	70	6	54	22	12	37	28	40	35	73	4.16	— 0.4	13	8,885	ne.	55	se.	6	5	11	15	6.5	5.8
Richmond	144	98	105	.....	.....	.....	43.8	.....	71	23	54	19	12	34	34	....	....	....	2.89	.....	12	6,265	n.	36	s.	6	5	11	15	6.5	
S. Atlantic States.							52.6	— 1.0											75	4.49	0.0								5.2	
Charlotte	773	68	76	29.21	30.05	+ .03	48.1	— 1.8	70	11	58	23	17	38	29	42	36	69	5.28	+ 0.5	11	6,635	s.	32	se.	1	10	8	13	5.7	T.
Hatteras	11	17	36	30.03	30.04	+ .03	49.8	— 0.3	68	*	55	30	13	44	24	47	44	81	4.74	— 1.4	12	13,350	sw.	51	se.	1	11	13	7	5.0	T.
Kittyhawk	8	12	30	.....	.....	.....	48.2	+ 0.8	70	6	56	28	13	40	32	....	....	....	5.43	+ 0.3	11	12,889	.....	....	.....	...	13	9	9	5.1	
Raleigh	376	93	101	29.65	30.06	+ .04	47.5	— 0.7	73	29	58	23	17	37	34	42	37	72	3.76	— 0.3	11	6,316	sw.	30	se.	1	11	10	10	5.1	
Wilmington	78	82	90	29.97	30.06	+ .04	52.0	— 1.9	73	30	61	29	17	43	30	46	42	78	2.48	— 1.5	11	7,719	sw.	37	nw.	16	9	11	11	5.2	
Charleston	48	14	92	30.04	30.09	+ .05	56.4	— 0.3	79	30	64	35	17	49	27	49	44	71	3.51	— 0.4	12	8,344	nw.	39	sw.	15	11	11	9	5.1	
Columbia	.....	5	....	.....	.....	.....	52.1	— 2.1	75	29	64	28	17	40	37	....	....	....	4.35	— 0.2	11	.....	nw.	....	.....	...	9	10	12	6.1	
Augusta	180	89	103	29.86	30.06	+ .03	53.4	— 2.1	75	11	64	29	17	43	33	46	41	71	3.82	— 1.4	10	5,643	nw.	30	w.	1	13	7	11	4.9	
Savannah	65	79	89	30.00	30.06	— .01	57.4	— 1.1	80	14	66	34	17	49	27	51	47	77	3.60	— 0.2	11	6,586	w.	31	w.	1	13	8	10	5.2	
Jacksonville	43	69	84	30.02	30.07	+ .02	61.2	— 0.8	79	25	70	38	2	52	27	54	51	80	7.95	+ 4.5	14	6,131	nw.	37	sw.	1	12	12	7	4.7	
Florida Peninsula.							67.9	— 0.3											80	6.05	+ 3.9								5.3	
Jupiter	28	13	30	30.02	30.06	+ .01	68.6	+ 0.8	83	25	75	46	2	63	26	63	61	81	8.20	+ 6.0	8	9,169	se.	34	s.	15	6	20	5	5.1	
Key West	22	43	50	30.04	30.06	+ .01	70.6	— 2.1	81	25	75	60	3	67	15	66	63	80	2.58	+ 1.4	5	8,830	se.	31	ne.	18	8	17	6	5.0	
Tampa	34	60	67	30.03	30.07	+ .01	64.4	— 1.1	80	12	73	45	17	56	25	58	55	80	7.26	+ 4.3	8	5,837	nw.	34	s.	15	8	14	9	5.9	
East Gulf States.							57.0	— 1.4											70	5.43	— 0.5								5.5	
Atlanta	1,174	139	156	28.82	30.08	+ .01	50.2	— 1.3	74	12	59	27	16	41	29	43	36	66	5.69	— 0.1	10	9,221	nw.	42	nw.	30	13	3	15	5.6	T.
Macon	370	93	99	.....	.....	.....	53.4	.....	77	11	64	28	17	43	35	....	....	....	3.68	.....	9	5,554	nw.	30	s.	15	11	12	8	4.5	
Pensacola	56	78	90	.....	.....	.....	59.8	+ 0.3	81	12	66	36	16	53	29	....	....	....	6.65	+ 1.2	10	7,726	ne.	44	nw.	19	9	10	12	5.6	
Mobile	57	88	96	30.01	30.08	+ .03	58.4	— 0.5	77	12	66	35	16	51	27	52	48	77	6.81	— 0.8	12	5,671	n.	32	s.	19	10	7	14	6.1	
Montgomery	223	100	112	29.83	30.08	+ .02	55.7	— 1.3	83	13	65	31	2	46	30	49	44	71	4.84	— 1.6	8	5,500	n.	28	w.	30	13	3	15	5.5	
Meridian	375	84	93	.....	.....	.....	54.4	— 3.0	85	12	64	29	17	44	39	....	....	....	4.50	— 1.8	10	4,657	nw.	26	w.	19	12	9	10	5.4	T.
Vicksburg	247	63	73	29.79	30.06	+ .01	57.0	— 1.0	87	12	66	32	16	48	29	48	40	59	4.42	— 2.0	9	5,429	sw.	30	nw.	19	9	8	14	6.2	0.4
New Orleans	51	112	120	30.02	30.08	+ .05	61.0	— 1.0	84	12	69	39	1	53	26	55	52	78	4.00	— 1.3	10	6,550	n.	36	n.	15	15	5	11	4.8	
Port Eads	.....	27	...	.....	.....	.....	59.2	— 3.0	75	4	68	39	1	51	27	....	....	....	6.50	+ 2.7	7	.....	e.	....	.....	...	8	10	13	....	
West Gulf States.							57.9	+ 0.1											73	4.05	+ 0.7								5.3	
Shreveport	249	77	84	29.81	30.08	+ .05	56.9	— 0.7	88	12	66	29	1	47	36	49	43	66	5.55	+ 0.9	7	5,311	e.	31	w.	23	10	2	19	6.5	1.0
Fort Smith	457	74	82	29.58	30.08	+ .06	51.3	+ 1.3	84	11	62	24	1	40	39	43	35	62	1.61	— 1.6	5	5,518	e.	28	n.	30	10	18	8	5.0	
Little Rock	357	93	100	29.70	30.10	+ .05	52.4	+ 0.2	86	11	62	22	16	43	39	45	39	68	1.23	— 4.0	10	6,353	nw.	34	nw.	6	12	10	9	5.2	T.
Corpus Christi	18	42	50	30.00	30.02	+ .01	64.0	+ 1.2	84	19	68	41	1	60	21	60	58	85	2.32	+ 0.6	11	9,558	se.	34	ne.	22	5	11	15	6.4	
Fort Worth	670	106	114	.....	.....	.....	56.3	.....	87	12	67	23	1	46	49	....	....	....	0.73	.....	8	8,158	s.	32	sw.	5	12	7	12	5.2	0.6
Galveston	54	84	88	29.98	30.03	+ .02	60.8	— 1.7	75	10	66	42	1	56	30	57	55	88	6.87	+ 4.0	7	7,048	e.	35	e.	22	7	14	10	6.1	
Palestine	510	54	61	29.50	30.06	+ .03	57.9	+ 0.3	86	12	67	27	1	49	37	51	46	72	6.44	+ 2.5	11	6,202	s.	26	ne.	15	12	3	16	5.8	1.0
San Antonio	701	95	104	29.27	30.02	+ .01	61.8	— 0.1	83	12	72	32	1	52	38	55	50	73	4.35	+ 2.3	9	6,801	se.	48	sw.	22	7	9	15	6.4	
Ohio Val. & Tenn.							41.2	— 2.7											71	2.59	— 1.7								6.1	
Chattanooga	762	106	112	29.28	30.10	+ .05	48.8	— 1.7	74	29	58	23	16	40	31	42	35	64	5.21	— 0.7	13	6,182	s.	32	w.	30	10	11	10	5.5	5.9
Knoxville	1,004	10	88	29.00	30.09	+ .03	46.0	— 1.6	73	11	55	20	16	37	31	39	33	69	3.64	— 1.7	13	6,782	sw.	38	sw.	6	10	8	13	5.9	11.3
Memphis	397	140	154	29.67	30.11	+ .07	51.2	— 0.4	81	11	60	24	16	43	27	44	36	62	2.98	— 2.9	11	7,902	nw.	36	nw.	6	12	9	10	5.4	1.0
Nashville	546	128	134	29.51	30.10	+ .06	46.5	— 2.2	78	11	56	16	17	37	30	41	36	71	2.20	— 3.0	10	5,748	nw.	36	s.	6	10	5	16	6.3	4.7
Lexington	989	75	102	.....	.....	.....	39.2	— 2.7	67	11	48	4	17	30	31	....	....	....	1.98	— 2.9	11	9,304	nw.	38	w.	26	14	4	13	5.5	4.0
Louisville	525	114	136	29.50	30.09	+ .04	42.0	— 2.4	72	11	51	9	17	33	31	37	33	76	1.50	— 2.5	11	7,681	sw.	33	nw.	16	11	9	11	5.8	0.7
Evansville	434	72	82	.....	.....	.....	42.4	.....	73	11	51	13	17	34	30	....	....	....	1.55	.....	9	6,331	w.	38	s.	6	11	7	13	5.3	0.2
Indianapolis	822	154	164	29.17	30.08	+ .06	35.1	— 4.4	62	23	43	2	17	27	31	31	27	75	2.10	— 1.5	11	8,944	nw.	47	nw.	16	4	9	18	7.1	0.6
Cincinnati	628	152	157	29.38	30.09	+ .05	38.0	— 4.2	63	11	47	5	17	29	34	33	28	70	1.75	— 1.6	13	7,500	nw.	36	w.	6	6	7	18	6.7	1.5
Columbus	824	87	100	29.16	30.08	+ .05	34.5	— 3.6	59	9	43	0	17	26	28	30	26	74	2.59	— 0.4	12	7,177	w.	30	sw.	6	9	6	16	6.2	3.7
Pittsburg	842	116	123	29.11	30.05	+ .02	34.3	— 4.4	62	6	42	1	17	26	34	30	25	71	2.35	— 0.4	14	6,209	nw.	26	nw.	6	8	11	12	5.8	8.5
Parkersburg	638	77	84	29.28	30.10	+ .06	37.9	— 2.6	64	23	46	4	17	29	31	34	30	79	2.18	— 1.1	15	5,804	w.	31	nw.	20	5	12	14	6.8	7.2
Elkins	1,940	41	50	.....	.....	.....	35.0	.....	62	18	44	3	17	26	38	....	....	....	4.41	.....	19	4,649	w.	25	se.	1	3	9	19	7.5	20.5
Lower Lake Region.							26.7	— 5.6											76	2.93	+ 0.4								6.4	
Buffalo	767	178	206	29.17	30.05	+ .05	25.4	— 4.6	49	19	32	4	17	19	37	22	17	69	3.80	+ 1.2	15	13,480	w.	60	w.	20	4	10	17	7.4	33.6
Oswego	335	76	87	29.53	30.02	+ .02	24.0	— 6.4	47	19	31	2	5	17	35	22	18	78	3.46	+ 0.8	15	11,177	n.	40	sw.	6	7	6	18	6.8	30.0
Rochester	523	81	90	29.43	30.02	+ .02	25.4	— 4.9	51	19	33	4	18	18	37	22	18	73	5.44	+ 2.6	18	7,780	nw.	42	w.	6	7	12	12	5.8	54.0
Erie	713	92	102	29.25	30.06	+ .06	26.8	— 5.6	52	6	34	1	17	30	37	25	22	85	2.72	0.0	14	9,713	w.	41	s.	6	7	9	15	6.5	18.4
Cleveland	762	190	201	29.20	30.06	+ .03	28.6	— 4.9	54	6	36	0	17	22	32	25	20	71	2.06	— 0.7	21	12,467	w.	48	w.	17	9	11	11	5.8	4.3
Sandusky	629	62	74	29.36	30.07	+ .04	29.1	— 5.6	54	19	36	0	17	22	31	26	22	75	1.10	— 1.4	12	7,905	sw.	32	w.	6	6	8	17	6.8	6.3
Toledo	628	123	128	29.36	30.08	+ .07	28.2	— 6.4	51	22	36	— 2	17	20	31	25	21	76	1.57	— 0.5	11	9,180	w.	39	sw.	22	10	9	12	5.6	7.3
Detroit	730	160	166	29.23	30.06	+ .05	26.3	— 6.2	46	22	34	— 2	17	19	27	24	20	77	3.26	+ 1.0	15	8,522	ne.	48	sw.	6	6	9	16	6.6	30.2
Upper Lake Region.							33.2	— 3.4											80	1.29	— 0.8								6.2	
Alpena	609	61	65	29.35	30.05	+ .03	21.5	— 2.5	47	31	30	— 3	12	13	30	20	16	78	0.76	— 1.2	7	8,300	nw.	33	se.	6	11	5	15	6.2	8.0
Escanaba	612	43	57	29.37	30.07	+ .04	20.7	— 1.1	44	29	30	— 8	17	11	31	18	15	84	0.47	— 1.3	7	7,114	n.	36	n.	27	6	12	13	6.3	4.8
Grand Haven	632	55	64	29.34	30.06	+ .05	25.7	— 4.9	41	22	32	2	16	19	28	24	22	84	2.06	— 0.2	12	8,452	nw.	40	w.	19	6	8	17	6.9	17.5
Marquette	734	67	95	29.22	30.06	+ .02	20.4	— 2.8	46	8	27	— 3	16	14	26	19	16	86	1.78	— 0.1	15	8,164	nw.	41	sw.	8	4	11	16	7.3	21.6
Port Huron	638	70	108	29.35	30.08	+ .07	23.4	— 5.7	44	6	31	— 2	17	16	32	21	18	82	2.17	— 0.4	12	9,968	w.	50	w.	16	9	7	15	6.2	18.7
Sault Ste. Marie	614	40	61	29.33	30.03	+ .01	17.8	— 4.1	43	8	27	—12	17	9	33	16	14	85	0.37	— 0.9	2	7,900	nw.	38	nw.	18	12	14	5	4.4	3.3
Chicago	823	241	274	29.16	30.08	+ .05	29.0	— 5.1	55	22	36	— 1	17	23	27	27	24	83	1.58	— 0.9	11	13,797	sw.	53	sw.	6	10	5	16	6.2	6.8
Milwaukee	681	124	142	29.31	30.08	+ .06	28.4	— 2.1	53	22	35	0	16	22	28	24	19	70	1.72	— 0.8	12	9,768	w.	44	e.	5	6	10	15	6.4	21.9
Green Bay	617	49	57	29.38	30.09	+ .05	24.0	— 2.7	53	31	32	— 6	16	16	28	21	16	72	1.07	— 1.0	8	6,925	n.	30	n.	6	6	8	17	6.7	11.5
Duluth	702	95	106	29.27	30.07	+ .02	21.5	— 2.5	55	31	29	—14	16	14	35	18	13	73	0.94	— 0.7	10	8,652	ne.	39	nw.	20	10	9	12	5.4	10.2
North Dakota.							22.2	+ 0.1											79	1.59	+ 0.3								5.6	
Moorhead	905	54	60	29.06	30.12	+ .02	21.3	+ 1.1	52	31	31	—14	16	12	46	19	17	88	1.28	+ 0.4	8	8,916	nw.	36	nw.	12	6	8	17	6.7	9.8
Bismarck	1,674	16	29	28.98	30.16	+ .06	22.5	— 0.1	62	10	34	—12	6	11	48	20	14	70	2.24	+ 1.2	7	8,455	nw.	46	nw.	1	13	9	9	5.2	21.9
Williston	1,875	15	31	28.07	30.17	+ .09	22.8	— 0.7	68	11	35	—15	6	11	57	20	16	80	1.25	+ 0.8	9	8,571	n.	48	nw.	1	17	8	6	4.8	12.5

TABLE I.—*Climatological data for Weather Bureau Stations, March*, 1900—Continued.

Stations.	Elevation of instruments.			Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.										Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.			Wind.					Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Total snowfall.
	Barometer above sea level, feet.	Thermometers above ground.	Anemometer above ground.	Mean actual, 8 a. m. + 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. + mean min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.				Total.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					
Upper Miss. Valley.							33.4	— 2.5								76			76	1.74	— 0.5								5.5		
Minneapolis		99	208				25.7	— 1.7	54	12	34	—10	16	18	38					1.50	0.0	8	8,065	nw.	36	nw.	12	10	6	15		16.7
St. Paul	837	114	124	29.13	30.08	+ .02	25.6	— 1.9	51	12	34	— 9	16	18	37	23	19	77		1.50	0.0	10	7,178	nw.	29	w.	12	10	12	9	5.3	15.1
La Crosse	714	70	78				26.8	— 4.0	50	31	35	— 8	16	19	34					1.49	— 0.1	12	6,157	n.	28	se.	4	10	10	11	5.6	18.1
Davenport	606	71	79	29.39	30.08	+ .08	30.8	— 4.1	60	22	39	0	16	23	32	28	23	76		2.92	+ 0.8	9	7,039	nw.	36	nw.	19	10	6	15	6.3	5.9
Des Moines	861	84	88	29.14	30.12	+ .07	33.0	— 1.7	68	22	42	— 4	16	24	37	30	26	80		3.07	+ 1.6	7	7,461	n.	32	e.	27	7	17	7	5.8	5.8
Dubuque	698	101	109	29.30	30.10	+ .07	28.4	— 4.5	59	22	36	— 4	16	21	29	25	22	79		1.84	— 0.4	12	7,182	nw.	36	nw.	19	9	10	12	5.7	10.8
Keokuk	614	63	78	29.41	30.10	+ .07	34.1	— 3.5	64	11	43	3	16	26	36	30	26	78		1.43	— 0.8	8	7,246	nw.	34	nw.	6	11	12	8	5.1	T.
Cairo	356	87	93	29.70	30.10	+ .08	46.2	— 0.6	79	11	55	15	17	37	30	40	36	72		1.50	— 1.2	9	8,612	nw.	32	w.	6	8	12	11	5 5	1.5
Springfield, Ill.	644	82	92	29.38	30.09	+ .05	36.6	— 2.6	64	11	45	5	17	28	35	31	27	76		1.50	— 1.2	8	8,396	nw.	34	sw.	17	13	12	6	4.5	0.2
Hannibal	534	75	110				37.0	— 2.5	68	11	47	4	16	27	36					1.16	— 1.2	8	8,934	nw.	38	w.	6	10	11	10	5.0	0.5
St. Louis	567	111	210	29.46	30.09	+ .05	42.8	— 0.3	77	11	52	10	16	34	38	37	32	72		1.45	— 2.0	6								4.9		
Missouri Valley.							36.4	+ 0.6								68			68	1.32	— 0.4								5.3		
Columbia	784	4	84				39.5	— 1.8	76	27	52	1	3	27	42					1.51	— 1.5	8	7,679	nw.	35	w.	6	10	13	8	4.0	0.5
Kansas City	963	78	95	29.05	30.12	+ .07	40.8	+ 0.3	78	11	51	6	16	31	39	35	28	66		1.39	— 0.8	7	6,858	nw.	32	nw.	19	17	6	8	4.5	0.2
Springfield, Mo.	1,324	100	103	28.66	30.09	+ .06	43.8	+ 0.3	80	11	53	12	1	35	38	38	32	69		1.13	— 2.2	8	8,046	nw.	31	nw.	6	15	8	8	4.5	T.
Topeka		81					41.0	0.0	81	12	53	4	1	30	39					0.83	— 1.2	6		nw.				12	12	7	4.6	0.4
Lincoln	1,189	75	84	28.78	30.09	+ .08	36.8	— 1.1	78	12	48	— 4	16	26	39	31	25	68		0.67	— 0.6	7	9,568	nw.	48	nw.	19	16	6	9	4.7	0.6
Omaha	1,105	115	121	28.87	30.09	+ .03	36.0	+ 0.5	77	12	46	— 6	16	26	38	31	27	76		1.48	0.0	7	8,098	ne.	36	nw.	19	12	12	7	5.4	0.5
Sioux City	1,135	96	164				32 9	+ 1.3	71	12	42	— 8	16	23	44					1.53	+ 0.2	7	11,310	nw.	50	nw.	19	12	10	9	5.0	2.5
Pierre	1,572	11	19	28.38	30.11	+ .02	32.6	+ 3.2	75	11	44	— 7	16	21	49	25	15	56		1.69	+ 0.8	11	9,589	nw.	52	nw.	1	11	7	13	5.6	13.2
Huron	1,306	56	67	28.64	30.12	+ .02	28.0	+ 0.4	72	10	41	—12	16	15	55	23	17	72		1.40	+ 0.5	8	10,315	nw.	44	nw.	19	10	15	6	4.6	13.9
Yankton	1,233	52	58				33.0	+ 3.0	75	10	44	— 9	16	22	48					1.56	+ 0.4	10	8,237	nw.	36	sw.	8	13	10	8	5.0	4.0
Northern Slope.							35.5	+ 3.7								63			63	0.60	— 0.2								5.0		
Havre	2,506	46	47	27.37	30.10	+ .05	31.2	+ 2.2	69	11	42	—15	6	20	50	27	23	75		0.76	+ 0.2	7	7,790	ne.	37	nw.	7	10	15	6	5.1	6.4
Miles City	2,371	42	50	27.50	30.08	.00	34.2	+ 2.8	74	11	44	—11	6	24	51	29	25	76		0.77	+ 0.2	7	5,864	n.	44	nw.	18	15	9	7	4.8	4.8
Helena	4,110	88	98	25.82	30.10	+ .04	38.6	+ 6.0	69	11	48	— 4	5	29	40	21	21	55		0.90	+ 0.3	5	5,848	sw.	58	w.	1	6	13	12	6.3	12.3
Kalispell	2,965	45	51	26.90	30.05		39.2		64	11	50	8	5	29	32	33	27	64		0.56		7	4,667	nw.	34	w.	11	10	13	8	4.8	3.7
Rapid City	3,234	46	50	26.59	30.04	— .04	33.4	+ 2.2	76	11	46	— 8	6	21	41	27	18	61		0.45	— 0.6	8	7,242	nw.	36	nw.	19	15	6	10	4.8	4.8
Cheyenne	6,088	56	64	23.96	30.13	+ .07	35.8	+ 3.0	69	11	47	9	17	24	37	28	16	53		0.72	0.0	6	8,291	nw.	40	nw.	5	13	11	7	4.5	7.6
Lander	5,372	28	36	24.61	30.08	.00	37.8	+ 6.9	70	11	52	9	6	24	44	31	21	57		0.31	— 1.1	3	3,242	ne.	36	sw.	8	8	19	4	4.8	3.1
North Platte	2,821	43	52	27.10	30.13	+ .06	37.8	+ 2.7	77	11	50	2	6	26	42	31	25	66		0.26	— 0.5	5	6,841	nw.	32	nw.	18	11	14	6	4.9	1.6
Middle Slope.							44.3	+ 2.0								61			61	0.70	— 0.2								4.5		
Denver	5,291	79	151	24.70	30.09	+ .05	42.8	+ 4.0	79	11	56	14	16	30	43	33	16	45		0.63	— 0.3	7	6,113	ne.	51	nw.	5	20	6	5	3.6	5.5
Pueblo	4,685	80	86	25.26	30.03	+ .01	44.3	+ 3.9	82	10	60	22	5	29	49	34	20	45		0.23	— 0.3	6	5,188	e.	48	w.	5	12	16	3	4.3	1.0
Concordia	1,398	42	47	28.58	30.11	+ .06	40.7	+ 1.7	81	11	52	7	16	29	42	35	30	74		1.60	— 0.2	6	5,573	s.	24	n.	14	14	10	7	4.8	T.
Dodge	2,509	44	52	27.42	30.09	+ .08	44.4	+ 2.8	86	12	57	14	16	31	44	37	31	70		0.58	— 0.4	5	7,690	se.	45	s.	3	9	18	4	4.7	3.6
Wichita	1,358	78	85	28.64	30.10	+ .08	44.2	+ 0.7	85	12	55	10	1	34	41	38	32	68		0.83	— 1.1	5	6,842	n.	36	s.	27	15	9	7	4.4	T.
Oklahoma	1,214	54	62	28.76	30.08	+ .06	49.6	— 0.9	89	11	61	20	1	38	43	42	34	62		0.36	— 2.7	6	8,169	s.	40	s.	27	10	13	8	5.1	T.
Southern Slope.							51.6	+ 2.1								60			60	1.01	+ 0.2								5.0		
Abilene	1,738	45	54	28.20	30.04	+ .02	56.0	+ 1.9	85	11	66	31	1	46	46	47	39	62		1.54	+ 0.4	6	6,867	se.	26	ne.	30	13	6	12	5.3	3.5
Amarillo	3,676	54	61	26.23	30.04	+ .03	47.2	+ 2.3	82	11	60	24	7	34	42	38	28	58		0.48	0.0	4	11,361	s.	50	w.	5	12	9	10	4.7	0.4
Southern Plateau.							55.1	+ 3.7								35			35	0.38	— 0.6								3.4		
El Paso	3,762	10	110	26.13	29.96	+ .01	58.0	+ 2.2	85	12	73	27	1	43	44	43	25	37		0.26	— 0.1	3	8,200	nw.	43	ne.	14	11	16	4	4.2	
Santa Fe	7,013	47	50	23.21	30.00	+ .01	43.8	+ 4.3	69	11	55	25	15	33	34	38	10	34		0.63	0.0	6	4,965	se.	32	nw.	5	19	8	4	3.8	3.4
Flagstaff	6,907	12	25	23.30	30.09		41.0	+ 3.8	72	12	57	15	7	25	48	35				0.45	— 2.7	6		sw.				5	10	16		T.
Phenix	1,108	47	57	28.74	29.91	— .04	65.6	+ 4.1	94	12	80	40	7	51	46	50	35	38		0.22	— 0.5	3	3,290	e.	23	s.	20	19	5	7	3.7	
Yuma	141	16	50	29.70	29.85	— .11	67.3	+ 2.8	94	31	83	43	7	52	43	52	36	41		0 06	— 0.2	2	3,884	w.	30	s.	20	23	3	5	2.4	
Independence	3,910	51	58	25.93	29.89	— .10	54.9	+ 5.2	78	11	68	28	5	42	34	41	16	25		0 67	+ 0.2	5	6,182	nw.	44	w.	22	17	10	4	3.2	
Middle Plateau.							46.6	+ 5.0								39			39	0.39	— 0.9								3.7		
Carson City	4,720	82	92	25.23	30.02	— .02	45.6	+ 3.5	73	31	60	24	30	32	45	37	25	48		0.63	— 0.7	4	5,193	w.	58	w.	7	11	10	10	5.2	0.3
Winnemucca	4,344	59	70	25.64	30.04	.00	44.4	+ 3.7	74	31	59	19	28	30	43	37	24	50		0.47	— 0.4	6	7,441	e.	38	sw.	25	13	5	13	5.1	3.8
Cedar City	5,850	36	47	24.22	30.02		47.8		71	12	59	24	5	36	33	35	10	25		0.22		2	5,357	se.	28	sw.	4	16	11	4	3.4	1.0
Salt Lake City	4,366	105	110	25.60	30.03	— .05	48.5	+ 6.9	72	10	59	26	5	38	31	38	24	40		0.33	— 1.7	2	4,701	se.	36	sw	4	21	4	3	2.0	3.6
Grand Junction	4,608	43	50	25.34	30.03		47.8	+ 5.9	74	12	64	23	29	32	39	35	15	32		0.13	— 0 7	2	4,091	se.	32	sw.	5	19	11	1	3.0	T.
Northern Plateau.							46.6	+ 6.8								55			55	1.13	— 0.7								5.4		
Baker City	3,471	53	58	26.46	30.04	— .02	44.2	+ 8.7	66	31	54	24	28	34	32	37	28	60		0.83	— 1.0	11	5,000	s.	40	se.	8	9	5	17	6.3	2.2
Boise	2,739	61	68	27.16	30.03	— .05	48.7	+ 4.8	74	31	60	26	27	37	37	41	32	58		0.53	— 1.3	5	3,606	se.	25	sw.	3	11	13	7	4.8	T.
Pocatello	4,482	48	56	25.45	30.04	— .05	43.5	+ 9.2	68	31	55	19	28	32	35	37	27	58		0.41	— 1.8	6	6,912	s.	37	s.	4	14	10	7	4.1	1 2
Spokane	1,943	99	107	27.95	30.03	+ .01	45.2	+ 5.5	69	31	55	25	5	35	35	40	34	70		2.25	+ 0.8	13	4,424	s.	37	sw.	8	9	3	19	6.7	2.8
Walla Walla	1,000	65	73	28.92	30.00	— .05	51.2	+ 5.7	72	18	61	32	2	42	28	48	44	77		1.61	— 0.2	12	3,942	s.	27	s.	7	12	12	7	4.9	
N. Pac. Coast Reg.							49.2	+ 3.9								78			78	6.34	+ 0.8								6.4		
Neah	50	7	24	29.89	29.95	— .07	47.2	+ 2.7	62	13	51	37	4	44	13	45	43	85		12.28	+ 1.8	20	5,387	se.	35	w.	25	5	8	18	7.2	
Port Crescent	259	15	20				45.4	+ 3.8	67	16	53	29	1	38	33					5.98	+ 1.3	18	3,069	e.	30	sw.	7	6	16	9	6.0	
Seattle	123	114	121	29.85	29.98	— .04	49.9	+ 4.5	75	31	57	32	2	43	31	47	44	81		4.45	+ 0.9	15	4,219	se.	27	s.	7	8	10	13	5.9	
Tacoma	213	113	120				49.0	+ 4.6	74	31	57	31	2	41	32					5.51	+ 1.6	18	4,129	sw.	33	sw.	7	5	7	19	7.1	
Astoria	20	57	64	29.98	30.00	— .03	48.9	+ 2.8	74	14	55	34	2	43	25	47				8.68	+ 1.7	20	5,472	ne.	42	s.	7	8	5	18	6.5	
Portland, Oreg	154	208	213	29.83	29.99	— .05	51.8	+ 4.6	76	16	60	35	2	44	26	47	42	71		4.63	— 0.9	13	6,865	se.	46	s.	7	8	11	12	5.7	
Roseburg	518	56	67	29.40	29.96	— .10	51.9	+ 4.2	78	31	62	34	27	42	38	47	42	73		2.86	— 0.7	14	2,548	e.	24	w.	25	4	17	10	6.2	
Mid. Pac. C'st Reg.							54.7	+ 2.4								75			75	2.35	— 1.7								5.4		
Eureka	62	60	69	29.99	30.05	— .01	50.5	+ 1.9	64	29	55	37	27	46	17	48	46	86		3.42	— 3.1	11	4,495	nw.	32	nw.	22	4	10	17	7.0	
Mount Tamalpais	2,375	11	18	27.52	30.07		52.2		69	21	58	35	4	46	22	46	40	69		2.91		8	11,338	nw.	53	nw.	27	19	4	8	4.1	
Red Bluff	332	54	58	29.62	29.97	— .06	58.6	+ 4.1	84	14	69	38	27	49	32	51	44	64		2.38	— 0.9	7	5,045	n.	35	se.	7	15	9	7	4.2	
Sacramento	69	106	117	29.90	29.98	— .06	57.3	+ 2.6	78	21	67	38	28	48	30	52	47	71		1.61	— 1.3	8	5,617	se.	28	se.	7	13	9	9	5.0	
San Francisco	155	161	167	29.85	30.01	— .05	55.2	+ 1.6	71	12	61	43	4	49	20	51	48	83		1.91	— 1.2	6	7,412	w.	35	sw.	31	12	14	5	4.5	
Point Reyes Light		12	16				51.7	+ 1.6	68	9	57	42	4	46	20					2.45	— 2.0	5	8,830	nw.	72	nw.	22	6	5	20	7.3	
S. Pac. Coast Reg.							59.2	+ 3.3								71			71	1.14	— 1.0								4.2		
Fresno	330	67	70	29.61	29.96	— .05	59.2	+ 4.7	87	31	71	38	27	48	36	52	45	65		0.88	— 0.4	4	3,741	nw.	21	nw.	26	20	8	3	3.4	
Los Angeles	338	74	82	29.60	29.95	— .07	60.4	+ 4.1	90	10	70	40	5	50	35	53	48	73		0.99	— 2.0	2	2,807	w.	14	w.	7	11	10	10	5.1	
San Diego	87	94	102	29.83	29.93	— .11	59.2	+ 3.2	80	10	64	46	7	54	22	54	50	74		0.53	— 1.0	4	4,332	nw.	26	sw.	4	24	3	4	3.2	
San Luis Obispo	201	10	46	29.79	30.01	— .04	58.2	+ 3.0	84	10	69	37	6	47	36	51	47	73		2.18	— 0.8	5	3,668	w.	24	w.	26	13	7	11	4.9	
West Indies.																														
Basseterre	29	41	54	30.01	30.04		77.0		83	30	81	69	12	73	13	69	65	69		1.04		5	8,951	e.	23	e.	28	10	18	3	4 2	
Bridgetown	30	57	65	29.96	29.99		78.6		87	29	84	69	23	73	16	72	69	74		0.65	— 0.6	13	7,664	ne.	27	e.	1	1	23	7	6.4	
Cienfuegos	52	62	67																											
Havana	57	83	100	29.98	30.04		72.2		86	20	78	56	13	66	21	67	64	80		3.58	+ 1.8	3	8,888	e.	38	ne.	22	7	13	11	5.8	
Kingston	286	38	52	29.67	29.98		76.4		89	20	85	63	14	68	23	69	65	72		0.47		3	5,385	se.	28	se.	24	5	21	2	5.2	
Port of Spain	40	65	66	29.90	29.94		79.0		89	12	86	70	26	72	19	73	70	76		3.51		17	3,701	e.	19	e.	1	6	15	10	6.1	
Puerto Principe	352	55	62	29.66	30.01		73.3		90	24	84	52	13	63	29	67	65	84		5.82		6	5,586	ne.	29	e.	23	11	14	6	4.9	
Roseau	25	37	47	29.97	29.99		78.0		87	29	84	69	25	72	16	69	65	66		2.92		10	5,092	e.	21	e.	15	12	14	5	4.6	
San Juan	82	48	73	29.96	30.04		75.8		89	31	82	67	7	70	18	69	66	71		1.57	— 0.8	11	10,213	e.	36	e.	7	14	16	1	3.7	
Santiago de Cuba	82	26	33	29.91	29.99		77.2		89	31	86	61	13	68	26	69	66	75		1.42		1	3,546	ne.	20	ne.	5	22	7	2	3.8	
Santo Domingo	57	37	44	29.99	30.05		74.7		86	11	82	59	15	67	21	69	67	79		1.77		5	4,792	n.	21	n.	13	14	15	2	3.8	
Willemstad	75	39	46	29.84	29.91		79.2		85	29	83	73	7	75	10	73	70	78		0.89		12	10,332	e.	28	e.	26	6	19	6	5.4	

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record. *Two or more dates. †Received too late to be considered in departures, etc.

TABLE II.—*Climatological record of voluntary and other cooperating observers, March, 1900.*

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Alabama.	°	°	°	*Ins.*	*Ins.*
Ashville	82	24	51.2	6.35	T.
Bermuda	85	28	56.9	6.96	T.
Birmingham	84	26	54.3	6.75	
Brewton	83	29	56.0	7.31	
Bridgeport	.....	.....	.....	4.56	.....
Citronelle	83	33	58.8	6.50	
Clanton	79	23	52.0	5.59	
Daphne	80[a]	33[d]	58.4[d]	7.90[c]	
Decatur	80	30	50.4	4.92	.....
Demopolis	.....	.....	.....	5.31	
Elba	84[d]	20[b]	53.6[f]	6.35[d]	
Eufaula *a*	81	27	55.0	8.64	
Eufaula *c*	.....	.....	.....	8.17	
Eutaw	86	25	54.0	4.78	T.
Evergreen	83	25	56.7	7.07	
Florence *a*	.....	.....	.....	3.91	3.4
Florence *b*	79	22	50.2	3.16	3.5
Fort Deposit	82	29	53.6	7.78	
Gadsden	81	23	50.6	7.86	3.0
Goodwater	82[f]	24	49.5[c]	5.85	T.
Greensboro	82	28	53.0	4.62	.....
Hamilton	76[a]	20	49.0[d]	5.78	.....
Healing Springs	86	30	56.2	4.98	
Highland Home	78	29	56.2	6.80	
Livingston *b*	82	30	54.5	6.61	T.
Lock No. 4	79	26	49.8	7.30	T.
Madison Station	78	17	50.5	3.51	2.0
Maplegrove	79	22	47.8	6.69	
Marion	85	22	53.8	2.10	
Mount Willing	82	29	55.2	6.93	
Newbern	81	28	54.8	3.76	T.
Newburg	80	30[b]	46.8[d]	4.25	12.0
Newton	78	26	52.4	8.07	
Oneonta	78	20	50.4	7.60	1.0
Opelika	78	28	51.2	6.10	
Oxanna	76	25	50.6	5.52	1.0
Pineapple	78	28	56.0	7.00	
Prattville	87	25	56.4	.....	
Pushmataha	84	29	55.2	4.71	T.
Riverton	77	22	48.2	3.74	4.0
Rockmills	80	24	52.1	5.19	T.
Scottsboro	77	24	48 4	5.35	T.
Selma	84	29	54.0	5.71	
Tallassee	.....	.....	.....	6.07	
Thomasville	83	30	56 5	5.70	
Tuscaloosa	85	26	51.6	6.08	
Tuskegee	84	27	53.4	4.20	
Union Springs	80	30	54.4	5.26	
Uniontown	83	32	55.8	3.71	
Valleyhead	77	20	48.0	6.59	T.
Warrior	.....	.....	.....	2.68	
Wetumpka	82	27	54.2	5.97	
Alaska.					
Sitka	65	— 1	37.8	2.62	T.
Arizona.					
Allaire Ranch	.....	.....	.....	0.66	
Arivaca	94	30	60.4	1.00	
Arizona Canal Co. Dam	97	36	64.4	0.34	
Aztec	.....	.....	.....	0.27	
Benson[•1]	85	40	61.8	0.25	
Bisbee	81	36	55.8	2.23	
Bowie[•5]	72	40	56.5	0.92	
Buckeye	98	34	64.6	0.70	
Camp Creek	88	40	61.7	0.86	
Casagrande[•1]	92	45	67.5	0.19	
Champie Camp	99	41	65.2	0.59	
Cochise[•1]	80	30	55.3	0.50	
Congress	89	44	63.4	0.50	
Dragoon Summit[•1]	70	39	55 3	0.96	
Dudleyville	90	32	61.0	1.07	
Fort Apache	86	20	52.2	1.15	
Fort Defiance	69	17	41.4	0.80	T.
Fort Grant	83	35	56.6	0.58	
Fort Huachuca	80	36	55.5	0.86	
Fort Mohave	101	39	69.7	0.01	
Gilabend[•1]	95	45	66.8	1.00	
Holbrook	78	20	49.6	0.68	
Jerome	81	36	57.4	0.05	
Maricopa[•1]	98	40	65.2	0.20	
Mesa	94	36	63.9	0 73	
Mount Huachuca	80	33	54.8	2.74	
Music Mountain	95	30	60.1	0.04	
Natural Bridge	.....	.....	.....	1.00	
Nogales	90	30	58.2	0.94	
Oracle	82	35	57.0	1.52	
Oro	.....	.....	.....	1.10	
Pantano[•1]	86	40	62.2	0.35	
Parker	100	37	68.8	0.07	
Peoria	95	38	64.0	0.21	
Phenix	94	34	63.0	0.23	
Pima	89	25	57.4	0.61	
Pinal Ranch	.....	.....	.....	1.18	
Prescott	80	21	48.8	0.74	
Russellville	.....	.....	.....	0.97	
San Carlos	94	30	59.7	0.85	
San Simon[•1]	68	30	47.9	0.00	
Sentinel[•1]	100	50	69.6	0.00	
Signal	99	30	63.6	0.29	
Silverking	.....	.....	.....	1.15	
Snowflake	77	10	45.3	0.75	
Strawberry	78	18	46.2	0.81	T.
Supai	95	40	63.5	0.10	
Texas Hill[•1]	98	45	68.2	0.10	
Tonto	90	25	56.2	0.85	
Tuba	85	28	54.4	0.60	
Tucson	92	31	62.7	0.54	
Vail[•5]	90	44	65.0	0.87	
Walnutgrove	.....	.....	.....	0.00	
Willcox[•1]	78	35	53.8	0.35	
Winslow	78	22	51.0	0.40	
Yarnell	.....	.....	.....	0.50	
Arkansas.					
Amity	88	23	52.8	2.30	T.
Arkadelphia	88	23	54.4	2.14	T.
Arkansas City	.....	.....	.....	5.31	
Batesville	89	18	50.0	1.70	
Beebranch	85[c]	16[a]	50.0[c]	2.15	2.0
Blanchard Springs	87	25	53.8	5.55	3.0
Brinkley	81	22	53.7	2.05	
Camden *a*	.....	.....	.....	4.49	2.0
Camden *b*	86	25	54.0	4.22	2.0
Canton	84	11	47.0	1.82	0.5
Conway	89	22	54.2	1.62	T.
Corning	82	15	47.3	2.29	0.8
Dallas	85	20	53.0	1.79	10.5
Dardanelle	.....	.....	.....	2.81	
Elon	87	26	52.6	7.48	2.0
Fayetteville	85	12	47.7	1.04	0.3
Fulton	.....	.....	.....	3.36	
Hardy	83	15	47.8	1.59	0.1
Helena *a*	.....	.....	.....	2.78	.....
Helena *b*	84	25	52.1	2.49	0.8
Hot Springs *b*	.....	.....	.....	1.62	.....
Jonesboro	84	20	49.8	2.61	2.0
Keesees Ferry	86	14	48.8	1.12	T.
Lacrosse	83	15	48.0	1.58	
Lonoke	83	22	52.3	2.07	1.4
Luna Landing	87	28	55.2	5.39	T.
Lutherville	80	16	49.8	2.54	2.0
Malvern	85	23	54.5	2.88	T.
Mariana	81	21	50.8	2.10	0.4
Marvell	84	24	52.2	2.22	1.0
Mossville	81	18	47.4	2.67	T.
New Gascony	84	24	52.6	3.47	0.5
Newport *a*	.....	.....	.....	1.60	0.4
Newport *b*	85	19	50.3	1.42	T.
Newport *c*	86	19	49.8	1.38	1.0
Oregon	88	14	50.5	0.95	0.5
Osceola	80	20	49.9	2.73	3.0
Ozark	82	21	51.6	2.11	
Pinebluff	88	23	51.5	4.20	
Pocahontas	81	15	47.8	1.87	T.
Pond	82	7	46.0	1.46	T.
Powell	87	14	47.8	0.84	
Prescott	90	23	54.0	2.58	T.
Rison	90	24	58.0	3.02	0.5
Silversprings	86	12	48.4	0.76	0.2
Spielerville	86	20	51.5	2.52	1.5
Stamps	85	25	52.6	3.23	T.
Stuttgart	86	23	52.2	2.97	1.3
Texarkana	88	24	57.2	.....	.....
Warren	84	25	52.3	4.51	4.0
Washington	90	23	55.0	2.51	0.2
Wiggs	84	19	52.4	2.32	2.0
Winslow	81	12	45.7	2.33	1.0
Witts Springs	87	15	49.2	1.42	0.5
California.					
Agnew	79	39	58.8	0.90	
Anada	.....	.....	.....	5.96	
Angiola	83	30	57.4	1.14	
Azusa	.....	.....	.....	2.40	
Bakersfield	87	32	59.6	0.43	
Ballast Point L. H	.....	.....	.....	0.34	
Bear Valley	.....	.....	.....	10.24	52.0
Berkeley	68	42	54.8	3.00	
Bishop	80	20	51.8	0.54	
Boca[•1]	68	13	34.7	3.52	33.0
Bodie	59	— 5	31.8	1.73	15.0
Bowman[•1]	70	26	40.7	10.77	53.0
Branscomb	.....	.....	.....	6.95	
Caliente	82	42	58.7	0.80	
Campbell	76	32	55.0	1.12	
Cape Mendocino L. H	.....	.....	.....	5.05	
Cedarville	73	22	45.5	1.29	7.0
Chico[•1]	88	42	59.9	2.00	
Chino	.....	.....	.....	0.00	
Cisco[•1]	57	23	37.5	9.37	79.0
Claremont	86	35	56.7	1.52	
Corning[•1]	81	40	58.1	1.60	
Coronado	81	51	60.0	.....	.....
Crescent City	63	36	50.7	5.75	
Cuyamaca	68	25	43.5	2.51	
Delano[•1]	78	40	58.2	0.51	
Delta[•1]	81	37	55.8	9.45	
Deweyville	92	34	59.1	0.47	
Drytown	82	38	58.2	4.47	
Dunnigan[•1]	80	42	54.8	2.10	
Durham[•1]	80	36	57.5	1.78	
East Brother L. H	.....	.....	.....	1.00	
Edmanton[•1]	71	27	44.6	8.95	21.0
Elcajon	96	35	59.9	0.71	
Elmdale	86	30	56.9	1.12	
Elsinore	102	31	60.9	0.39	
Escondido	85	29	55.7	0.79	
Fallbrook[•1]	92	40	58.2	0.76	
Folsom City	83	42	58.0	2.27	
Fordyce Dam	.....	..	.....	7.27	86.0
Fort Bragg	.....	.....	.....	3.85	
Fort Ross	72	37	53.0	6.01	
Georgetown	79	32	53.7	6.65	7.0
Gilroy Hot Springs	.....	.....	.....	1.44	
Gilroy (near)	84	32	57.0	1.14	
Goshen	.....	.....	.....	1.09	
Grand Island[•5]	79	38	59.2	0.69	
Grass Valley	.....	.....	.....	7.59	4 0
Greenville	75	21	46.4	6.00	16.5
Hanford	81	34	58.7	1.18	
Healdsburg	80	31	56.2	7.01	
Hollister	81	32	56.6	0.75	
Humboldt L. H	.....	.....	.....	3.44	
Indio[•1]	96	42	67.1	0 30	
Iowa Hill[•1]	74	36	53.1	6.40	6.5
Irvine	102	46	67.3	0.43	
Jackson	64	32	48.5	4.37	
Johnsville	.....	.....	.....	14.12	117.0
Jolon	.....	.....	.....	1.00	
Kennedy Gold Mine	75	31	51.6	4.89	
Kernville	.....	.....	.....	0.58	
King City[•1]	82	38	51.0	0.85	
Kono Tayee	74	39	55.6	2.89	
Lagrange[•5]	83	42	59.2	1.53	
Lakeside	.....	.....	.....	0.67	
Lamesa	.....	.....	.....	0.72	
Lankershim	81	33	55.2	0.82	
Laporte[•1]	64	24	41.4	12.24	52.9
Las Fuentes Ranch	.....	.....	.....	1.74	
Legrand	.....	32	.....	0.48	
Lemoncove	90	34	61.6	0.84	
Lick Observatory	67	31	48.1	3.37	
Lime Point L. H	.....	.....	.....	1.73	
Lodi	81	36	57.1	1.45	
Los Gatos *b*	78	37	54.8	2 93	
Mammoth[•1]	95	57	69.6	0.25	
Manzana	83	36	58.3	0.93	
Mare Island L. H	.....	.....	.....	2.02	
Merced *b*	86	32	57.0	1.07	
Mills College	.....	.....	.....	2.98	
Milton (near)[•1]	82	37	56 3	3.38	
Modesto[•1]	87	41	62.6	0.98	
Mohave[•1]	85	35	54.8	T.	
Mokelumne Hill[•5]	.....	35	51.8	3.34	
Monterio	80	32	57.2	0.79	
Monterey[•5]	71	40	55.4	1.18	
Morena	90	28	53.8	1.04	
Mountainview	.....	.....	.....	1.01	
Mutah Flat	.....	.....	.....	1.95	
Napa *b*	81	36	56.6	2.90	
Needles	89	47	69.2	T.	
Nevada City	75	30	50.4	7.51	4.0
Newhall[•1]	92	35	55.6	1 97	
Niles[•1]	82	48	61.0	1.87	
North Bloomfield	78	32	52.8	9 64	12.0
North Ontario	84	39	57.3	1.93	
North San Juan[•1]	83	42	55.3	5.34	
Oakland *a*	73	44	56.8	2.76	
Ogilby[•1]	105	50	73.2	0.00	
Oleta[•1]	75	38	52.3	4.66	
Orland[•1]	80	30	56.0	1.32	
Palermo	84	34	57.4	2.29	
Palmdale	.....	.....	.....	0.80	
Paso Robles *b*	82	32	57.1	1.90	
Peachland[•5]	75	38	56.4	4 88	
Piedras Blancas L. H	.....	.....	.....	0.98	
Pigeon Point L. H	.....	.....	.....	1 22	
Pilot Creek	.....	.....	.....	8.70	26.0
Pine Crest	85	43	59.6	2.18	
Placerville	73	31	50.4	5.84	
Point Ano Nuevo L. H	.....	.....	.....	1.90	
Point Arena L. H	.....	.....	.....	2.39	
Point Bonita L. H	.....	.....	.....	3.19	
Point Conception L. H	.....	.....	.....	0.57	
Point Firmin L. H	.....	.....	...	0.36	
Point George L. H	.....	.....	.....	2.39	
Point Hueneme L. H	.....	.....	.....	0.60	
Point Lobos	64	44	53.0	2.23	
Point Loma L. H	.....	.....	.....	0.15	
Point Montara L. H	.....	.....	.....	3.85	
Point Pinos L. H	.....	.....	.....	1.80	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
Point Sur L. H	.....	.....	.....	1.40	
Pomona (near)	93	39	61.7	1.02	
Poway *2	90	37	54.8	0.69	
Quincy	70	26	46.4	7.79	15.0
Raymond	85	30	54.5	2.09	
Redding	82	38	58.0	3.68	
Redlands	95	38	60.8	0 78	
Reedly	81	35	58.3	1.45	
Represa	76	38	56.4	2.73	
Riovista	78	40	57.4	1.46	
Riverside	94	37	61.0	0.95	
Roe Island L. H	.....	.....	.....	1.21	
Rosewood	80	29	54.6	2.37	
Sacramento *a*	78	36	58.0	1.96	
Salinas *1	75	48	57.8	1.03	
Salton *5	99	55	78.7	0.12	
San Bernardino	95	34	60.4	0.92	
San Jacinto	94	34	60.4	0.76	
San Leandro *1	75	46	58.6	2.63	
San Luis L. H	.....	.....	.....	1.54	
San Mateo *1	71	45	58.3	2.19	
San Miguel *1	81	41	58.2	1.63	
San Miguel Island	70	38	50.8	0.75	
Santa Barbara *a*	84	42	58.3	1.58	
Santa Barbara L. H	.....	.....	.....	1.54	
Santa Clara *a*	.....	.....	.....	1.10	
Santa Cruz *b*	81	32	55.8	3.58	
Santa Cruz L. H	.....	.....	.....	2.74	
Santa Maria	84	37	59.0	1.41	
Santa Monica *1	73	50	58.6	0.60	
Santa Paula	92	42	63.3	1.36	
Santa Rosa *1	76	38	55.1	3.72	
Shasta	84	32	58.7	6.81	
Sierra Madre	82	40	59.2	1.92	
Snedden	.....	.....	.....	1.45	3.0
Sonoma	.....	.....	.....	2.66	
S. E. Farallone L. H	.....	.....	.....	2.70	
Stanford University	73	34	54.7	1.21	
Stockton *a*	77	38	54.8	1.73	
Summerdale	67	23	44.5	6.36	34.0
Susanville	67	27	44.9	2.97	10.0
Tehama *1	82	40	56.4	1.42	
Tejon Ranch	92	42	61.6	0.41	
Templeton *1	76	45	56.8	1.80	
Thermalito	86	36	58.4	2.27	
Trinidad L. H	.....	.....	.....	3.46	
Truckee *1	64	20	33.4	4.20	42.0
Tulare *b*	.....	.....	.....	0.12	
Tulare *c*	94	30	59.5	0.77	
Ukiah	82	30	55.4	3.99	
Upperlake	84	33	55.6	3.53	
Upper Mattole *1	78	33	49.6	9.37	
Vacaville *a* *1	81	42	57.3	2.46	
Ventura	76	39	56.9	1.19	
Visalia	82	.....	.....	1.04	
Volcano Springs *1	100	47	67.2	0.62	
Walnutcreek	77	36	59.7	1.82	
Westpoint	.....	.....	.....	3.47	2.0
West Saticoy	.....	.....	.....	1.10	
Wheatland	76	36	56.2	1.90	
Williams *1	78	42	60.2	0.80	
Wilmington *1	77	45	60.2	0.50	
Wire Bridge *5	83	37	56.7	4.82	
Yerba Buena L. H	.....	.....	.....	1.60	
Yreka	74	27	49.0	1.12	T.
Yuba City *5	81	42	60.2	1.91	
Colorado.					
Arkins	.....	.....	.....	0.97	9.0
Aspen	.....	.....	.....	0.64	10.0
Boulder	79	18	43.2	0.75	6.8
Boxelder	.....	.....	.....	0.62	5.0
Breckenridge	55	— 3	22.2	1.06	17.1
Buenavista	.....	.....	.....	0.30	3.0
Canyon	82	22	46.5	0.52	3.0
Castlerock	74	7	39.6	0.62	7.0
Cedaredge	74	17	44.6	0.17	T.
Cheyenne Wells	83	14	41.2	0.56	4.0
Clearview *1	54	12	29.3	0.54	8.5
Colorado Springs	73	12	40.5	0.17	3.1
Cope	76	15	41.4	0.70	7.0
Crook	80	2	40.9	0.45	5.0
Delta	80	15	46.5	0.02	T.
Dumont	.....	.....	.....	0.76	4.0
Durango	78	17	44.1	0.18	0.3
Fairview	70	11	36.6	0.38	4.5
Fort Collins	77	10	39.4	1.07	7.9
Fort Morgan	76	10	40.8	0.62	6.2
Fox	.....	.....	.....	0.25	2.5
Garnett	65	10	36.7	0.01	
Georgetown	59	12	35.7	.....	.....
Gilman	.....	.....	.....	0.71	19.2
Gleneyrie	71	15	40.7	0.50	2.8
Glenwood	.....	.....	.....	0.05	0.5
Greeley	77	17	40.8	0.62	8.0
Gunnison	62	— 6	32.3	0.22	3.0
Gypsum	.....	.....	.....	0.43	5.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Colorado—Cont'd.	°	°	°	*Ins.*	*Ins.*
Hamps	75	13	39.4	0.86	9.5
Hoehne	74	12	42.7	0.22	3.2
Holyoke (near)	84	2	40.2	0.75	9.0
Hugo	.....	.....	.....	0.85	9.0
Husted	74	8	39.0	0.58	4.8
Lake Moraine	58	7	28.4	1.14	20.2
Lamar	85	19	46.4	0.58	T.
Laporte	.....	.....	.....	0.79	9.0
Las Animas	82	19	44.8	0.22	2.0
Lay	61	1	35.9	0.43	3.0
Leadville (near) *1	54	6	25.6	0.96	15.5
Leroy	76	8	38.5	0.12	1.7
Longs Peak	60	8	30.4	0.35	5.5
Mancos	76	10	42.6	0.66	0.8
Marshall Pass	.....	.....	.....	1.07	16.0
Meeker	65	9	37.6	0.26	1.5
Mitchell	.....	.....	.....	0.41	6.5
Montrose	.....	.....	.....	0.26	2.0
Moraine	60	11	33.6	0.30	3.8
Pagoda	60	9	36.2	0.55	4.5
Palmer	.....	.....	.....	0.35	3.5
Parachute	71	22	46.3	0.38	
Perrypark	.....	.....	.....	T.	T.
Rockyford	82	19	45.2	0.37	T.
Ruby	.....	.....	.....	1.43	22.0
Saguache	65	11	38.6	T.	T.
Salida	77	11	40.9	0.10	1.0
San Luis	72	15	39.0	0 40	4.0
Santa Clara *1	66	17	37.9	0.77	8.0
Sapinero	.....	.....	.....	0.14	2.5
Sargents	.....	.....	.....	0.12	2.0
Seibert	.....	.....	.....	0.42	4.5
Silt	69	14	43.0	0.36	4.0
Sprinfield	.....	.....	.....	0.25	2.5
Strickler Tunnel	.....	.....	.....	1.23	15.0
Trinidad	18	18	45.4	0.10	.....
Troutvale	58	—18	27.6	0.44	6.8
T. S. Ranch	70	18	45.3	0.10	1.0
Twinlakes	.....	.....	.....	0.49	7.0
Vilas	.....	.....	.....	T.	T.
Wagon Wheel	64	3	33.6	0.17	2.5
Walden	54	5	31.0	0.26	4.2
Wallet	.....	.....	.....	0.60	6.0
Westcliffe	64	10	36.6	0.42	5.0
Wray	79	5	41.3	0.33	0.5
Yuma	.....	.....	.....	0.61	5.5
Connecticut.					
Bridgeport	58	7	34.3	3.63	7.0
Canton	53	— 4	28.8	5.66	8.5
Colchester	56	6	33.3	6.26	6.0
Falls Village	.....	.....	.....	4.50	8.8
Greenfield Hill	.....	.....	.....	4.48	7.7
Hartford *b*	59	8	32.7	5.75	6.0
Hawleyville	53	- 2	32.2	5.95	7.5
Lake Konomoc	.....	.....	.....	5.41	.....
Middletown	57	5	32.7	6.27	4.5
New London	54	9	34.8	4.25	2.5
North Grosvenor Dale	57	6	32.2	6.53	.....
Norwalk	56	0	32.5	4.08	7.0
Southington	53	6	32.4	5.80	8.0
Storrs	52	2	30.1	6.78	5.5
Voluntown	55	7	33.4	6.78	4.5
Wallingford	.....	.....	.....	5.24	4.5
Waterbury	55	4	32.0	5.51	6.5
West Cornwall	49	0	27.5	3.84	10.9
West Simsbury	.....	.....	.....	5.77	8.0
Winsted *1	48	0	27.3	.....	.....
Delaware.					
Millsboro	69	14	39.0	4.27	.....
Newark	64	6	36.2	2.66	9.0
Seaford	67	13	40.0	3.43	.....
District of Columbia.					
Distributing Reservoir *5	62	12	39.2	2.57	5.0
Receiving Reservoir *5	62	13	39.4	2.42	7.0
West Washington	68	10	38.9	3.36	11.0
Florida.					
Archer	84	37	62.6	7.94	
Bartow	84	43	66.2	6.50	
Brooksville	93	41	63.6	6.85	
Carrabelle	85	38	62.1	4.24	
Clermont	84	43	65.2	2.40	
Dalkeith	84	32	60.8	6.95	
De Funiak Springs	86	31	59.0	8.57	
Deland	83	41	62.8	.....	
Ernestville	85	44	65.4	10.05	
Estero *1	82	50	67.2	.....	
Eustis	87	41	65.2	6.14	
Federal Point	81	38	60.8	5.54	
Fort George	80	44	60.9	.....	
Fort Meade	86	42	66.7	9.50	
Gainesville	81	36	61.6	7.85	
Homeland	80	41	63.0	.....	
Huntington	81	38	61.7	7.01	
Inverness	.....	.....	.....	6.33	
Jasper	81	35	60.0	6.01	
Kissimmee	84	43	65.9	6.07	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Florida—Cont'd.	°	°	°	*Ins.*	*Ins.*
Lake City	83	34	62.4	6.93	
Lemon City	86	47	71.1	5.20	
Macclenny	82	34	60.2	12.37	
Manatee	82	45	64.5	8.59	
Merritt Island	80	47	62.7	6.55	
Middleburg	90	40	62.4	7.60	
Myers	83	48	67.2	4.12	
New Smyrna	85	38	62.2	7.68	
Nocatee	86	44	68.7	8.05	
Ocala	84	36	63.5	6.04	
Orange City	85	43	64.8	5.79	
Orlando	81	45	65.0	6.93	
Plant City	86	41	65.6	7.30	
Rockwell	82	40	64.1	6.32	
St. Andrews	76	33	59.6	8.36	
St. Francis	83	39	62.5	5.19	
St. Francis Barracks	80	36	59.8	3.90	
Sebastian	82	45	66.0	7.09	
Stephensville *1	80	25	59.0	11.43	
Switzerland *1	79	38	59.2	6.55	
Tallahassee	79	33	58.5	6.64	
Tarpon Springs	84	42	63.6	8.18	
Georgia.					
Adairsville	75	24	48.5	7.08	T.
Albany	77	31	55.3	6.13	
Allentown	79	27	55.5	5.57	
Americus	78	29	55.0	8.12	
Athens *b*	72	26	49.9	6.54	
Bellville	.....	.....	.....	5.91	
Blakely	80	35	57.4	7.61	
Canton	.....	.....	.....	6.61	
Carlton	.....	.....	.....	4.71	
Cedartown	74	24	50.2	6.35	
Clayton	73	18	47.2	6.16	T.
Columbus *...	77	32	54.4	4.60	
Covington	78	24	50.8	3.40	
Dahlonega	78	17	47.8	6.35	T.
Diamond	73	17	46.8	5.80	1.0
Dublin	.....	.....	.....	5.28	
Elberton	71	24	51.4	5.74	
Fitzgerald	81	28	57.0	7.21	
Fleming	80	28	57.0	4.30	
Forsyth	75	27	52.8	3.88	
Fort Gaines	81	32	56.4	8.01	
Franklin	76	28	52.4	4.18	
Gainesville	72	22	47.7	6.75	
Gillsville	77	18	49.7	5.72	
Greenbush	73	20	47.7	6.46	2.0
Harrison	76	26	53.3	3.67	
Hawkinsville	75	32	54.4	6.30	
Jesup	82	33	59.0	3.89	
Lumpkin	82	30	56.3	6.12	
Marshallville	80	30	55.0	4.[illegible]	
Mauzy	85	32	59.0	5.37	
Morgan	79	29	55.5	4.55	
Mount Vernon	78	28	57.7	4.60	
Naylor	83	32	59.4	4.83	
Newnan	73	27	48.8	4.88	
Oakdale	.....	.....	.....	5.81	
Pelham	.....	.....	.....	3.94	
Piscola	82	33	59.6	.....	
Point Peter	72	25	46.9	4.54	
Poulan	81	30	56.1	6.78	
Putnam	79	28	54.6	4.53	
Quitman	81	30	58.6	6.05	
Ramsey	75	22	49.8	5.27	T.
Resaca	.....	.....	.....	6.61	
Reynolds	.....	.....	.....	6.44	
Rome	75	25	49.2	7.66	T.
Talbotton	78	26	53.6	4.60	
Thomasville	83	34	59.0	5.94	
Toccoa	76	22	49.6	7.30	
Valona	85	32[d]	58.7	5.27	
Washington	.....	.....	.....	5.83	
Waycross	80	32	58.8	6.26	
Westpoint	.....	.....	.....	4 05	
Idaho.					
Albion	75	20	43.9	0.53	2.0
American Falls	72	15	43.8	0.22	
Atlanta	59	13	37.0	1.58	7.5
Blackfoot	79	13	41.3	0.00	
Burnside	62	13	38.2	0.55	5.0
Challis	72	18	43.4	0.10	1 0
Chesterfield	63	12	34.7	0.12	T.
Downey	65	15	43.4	0.00	
Fort Sherman	68	16	40.2	4.02	4.5
Garnet	80	22	51.8	0.35	
Gray	70	8	38.6	0.10	1.0
Hagerman	86	23	49.8	0.58	
Hailey	.....	.....	.....	1.26	8.8
Idaho City	67[b]	17[b]	41.8[b]	1.78	4.3
Kootenai	55	10	35.8	1.52	5.0
Lake	50	10	31.5	2.60	26.0
Lakeview	66	19	42.4	3.86	4.0
Lewiston	68	33	48.9	0.38	
Lost River	62	12	39.0	0.58	4.5

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Idaho—Cont'd.	°	°	°	*Ins.*	*Ins.*
Marysville	67	— 2	33.0	0.38	3.8
Moscow	68	20	44.5	2.48	
Murray	61	23	40.6	3.53	6.0
Oakley	75	16	44.1	T.	T.
Ola	71	23	46.7	1.75	0.5
Paris	64	3	36.2	0.30	
Payette	80	22	49.2	0.64	
Pollock	76	27	48.5	1.39	
Priest River	73	20	41.6	3.16	13.0
St. Maries	65	27	44.4	3.09	0.5
Soldier	65	6	35.6	1.10	3.0
Swan Valley	60	10	37.5	0.13	1.5
Weston	69	20	43.4	0.40	1.0
Yellowjacket	...	.....	.....	1.34	
Illinois.					
Albion	74	5	40.4	2.30	1.5
Alexander	65	3	36.7	1.47	0.9
Ashton	56	0	29.2	2.42	17.1
Astoria	62	4	34.1	1.17	1.1
Aurora *a*	56	— 1	29.4	2.23	5.7
Aurora *b*	57	0	29.2	2.37	7.8
Beardstown	.....	.....	.....	3.20	21.0
Bloomington	61	0	33.4	2.60	2.0
Bushnell	63	6	34.0	1.50	T.
Cambridge	59	0	29.9	3.40	16.7
Carlinville	74	6	39.2	1.72	1.9
Centralia	77	9	42.8	2.05	T.
Charleston	69	2	36.7	1.99	2.0
Chemung	57	— 2	25.0	1.49	10.2
Chester	.....	.....	.....	1.97	0.3
Clare	75	8	39.9	2.18	
Coatsburg	63	2	34.5	0.45	0.5
Cobden	80	9	45.0	2.28	
Danville	60	2	33.8	0.99	4.0
Decatur	65	— 1	35.2	1.84	1.0
Dixon	58	0	29.9	2.86	11.0
Dwight	56	— 1	30.8	2.87	5.0
Effingham	70	5	38.4	1.90	0.3
Elgin	56	0	28.6	1.58	7.3
Equality	78	10	44.4	2.43	
Flora	74	5	39.8	1.91	T.
Friendgrove [1]	70	12	42.4	2.13	0.2
Galva	59	— 2	30.6	2.95	7.2
Glenwood [1]	55	— 4	29 2	1.71	4.0
Grafton	.....	.....	.....	2.05	2.0
Grayville	66	10	42.5	2.05	T.
Greenville	76	7	39.8	2.09	1.7
Griggsville	66	4	37.0	1.54	.....
Halfway	77	11	44.0	1.89	T.
Halliday	79	3	41.3	1.15	
Havana	58	.....	.....	0.72	0.8
Henry	60	— 1	32.0	3.15	16.0
Hillsboro	63	6	37.9	1.70	0.5
Joliet	56	0	29.8	2.24	7.0
Kishwaukee	55	— 1	28.4	1.07	5.0
Knoxville	61	— 2	30.8	3.20	6.5
Lagrange	56	0	29.8	1.84	5.5
Laharpe	62	1	32.6	1.55	3.0
Lanark	58	— 1	28.0	1.51	16.2
Loami	.....	.....	.....	1.34	T.
Martinsville	69	6	37.2	1.56	1.7
Martinton	56	0	31.1	3.52	4.0
Mascoutah	.....	.....	.....	3.40	1.3
Mattoon	68	8	40.4	2.13	2.4
Minonk	57	— 1	31.0	3.02	5.5
Monmouth	62	— 1	31.2	2.10	3.4
Morrisonville	67	5	37.8	1.59	T.
Mount Carmel	.....	.....	.....	2.13	1.1
Mount Pulaski	63	0	35.4	1.22	1.3
Mount Vernon	76	8	39.7	1.43	0.2
New Burnside	75	9	44.6	1.89	
Olney	71	7	40.5	2.37	2.0
Ottawa	58	2	31.8	2.91	6.0
Palestine	67	4	37.5	4.02	0.4
Pana	67	5	37.8	1.66	T.
Peoria *a*	.....	.....	.....	3.01	.....
Peoria *b*	61	4	34.2	1.42	1.4
Philo	63	— 1	34.2	1.89	1.8
Plumhill	78	10	41.9	1.88	0.8
Rantoul	60	1	32.9	2.72	4.3
Raum	77	11	44.6	1.76	T.
Riley	51	— 2	25.6	1.35	9.3
Robinson	72	7	39.4	1.76	T.
Roundgrove	39	0	26.2	3.12	.....
Rushville	64°	3°	33.4°	0.96	1.5
St. John	82	9	44.5	1.85	T.
Scales Mound	56	— 4	26.7	2.09	11.0
Shobonier	75	7	41.6	1.40	T.
Streator	58	— 3	32.0	2.85	.....
Sullivan	68	3	36.5	1.92	T.
Sycamore	55	— 1	27.7	1.96	4.3
Tilden	78	10	42.8	1.95	T.
Tiskilwa	54	— 3	29.1	3.52	9.0
Tuscola	68	1	35.2	2.07	0.1
Walnut	58	1	30.9	3.17	15.5
Wheaton [2]	54	1	31.1	1.66	13.0
Illinois—Cont'd.					
Winnebago	57	0	27.8	2.07	8.0
Yorkville	54	— 1	28.5	1.70	5.4
Zion	58	0	28.8	.....	.....
Indiana.					
Anderson	60	0	33.0	2.37	1.0
Angola	52	— 6	27.5	2.88	13.7
Auburn	57°	— 3°	29.0°	1.89	9.5
Bedford	75	7	36.4	0.96	T.
Bloomington	65	4	37.8	3.35	1.0
Bluffton	57	— 3	32.4	1.92	6.3
Boonville	71	6	41.2	1.40	.....
Butlerville	69	4	41.9	2.92	6.6
Cambridge City	61	— 1	35.0	2.12	0.2
Columbus	69	2	37.6	1.41	...
Connersville	61	1	34.8	1.92	0 1
Crawfordsville	65	1	37.0	2.89	T.
Culver	60	1	33.0	.....	.....
Delphi	57	0	31.6	2.57	4.5
Edwardsville	.....	.....	.....	1.46	0.8
Fairmount	68	— 1	33.6	2.16	1.5
Farmland	59	0	34.3	2 28	4.0
Fort Wayne	56	— 4	30.8	1.87	8.5
Franklin [1]	65	7	37.4	1 06	0.2
Greencastle	61	2	35.3	1.97	0.2
Greensburg	61	1	35.6	1.93	T.
Hammond	55	5	29.0	1.49	10.0
Hector	53	— 2	33.0	2.80	6.0
Huntington	55	— 1	31.8	2.44	12.5
Jeffersonville	70	10	41.8	1 34	T.
Knightstown	64	0	34.5	2.04	T.
Kokomo	61	0	34.6	2.33	4.0
Lafayette	57	— 2	33.0	2.75	3.4
Laporte	54	— 2	30.7	2.59	14.9
Logansport	53	0	30.4	3.46	14.5
Madison *a*	70	7	40.4	2.32	1.0
Madison *b*	.....	.....	.....	1.23	.....
Marengo	71	7	41.0	2.43	2.2
Marion	57	— 2	33.8	2.16	4.0
Markle	54	— 3	31.2	1.30	10.0
Mauzy	62	0	35.6	2.21	0.5
Mount Vernon	79	9	42.7	1.33	T.
Northfield	60	— 1	33 9	2.94	2.5
Paoli	69	5	40.0	1.93	T.
Prairie Creek	64	5	38.8	1.45	T.
Princeton	73	8	39.0	1.90	2.0
Richmond	61	1	35.9	1.92	T.
Rockport	72	20	44.1	1.11	T.
Rockville	65	2	36.1	1.52	1.0
Salem	67	5	38.5	2.03	2.5
Scottsburg	68	8	40.8	1.48	T.
Seymour	64	6	36.6	2.30	2.2
Shelbyville	63	4	36.0	1.69	0.5
South Bend	50	— 3	29.0	2.46	11.5
Syracuse	52	— 4	29.5	2.90	9.5
Terre Haute	69	5	37.6	2.25	T.
Topeka	48	5	28.0	1.56	3.0
Valparaiso	52	— 4	30.8	1.80	8.0
Veedersburg	65	0	37.0	3.18	3.5
Vevay	69	8	40.4	1.40	1.0
Vincennes	72	8	40.2	2.42	2.0
Washington	.....	.....	.....	1.28	0.5
Winamac	54	1	30.3	0.74	0.8
Worthington	70	5	38.1	2.32	0.9
Indian Territory.					
Hartshorne	89	21	54.2	1.44	
Healdton	88	19	53.4	1.39	T.
Lehigh	91	22	53.4	2.41	
Muscogee	89	18	49.8	0.57	
Ryan	84	24	53.8	1.25	
South McAlester	.....	.....	.....	1.19	T.
Tahlequah	82	15	49.5	0.55	
Tulsa	.....	.....	.....	1.02	
Wagoner	85	15	50.0	0.85	
Webbers Falls	.....	.....	.....	1.11	
Iowa.					
Afton	67	— 5	33.6	2.52	T.
Albia	65	— 3	34.6	1.13	3.5
Algona [1]	58	—10	27.9	2.50	17.0
Alta *a*	68	—10	28.4	1.96	6.8
Amana	63	— 3	30.8	2.96	4.5
Ames *b*	.....	— 4	.....	2 81	2.6
Ames (near)	.....	.....	.....	3.66	5.0
Atlantic	69	— 4	32.6	2.04	0.8
Audubon	69	— 6	32.6	2.05	.....
Bancroft	60	— 9	28.2	2.40	16.0
Batavia	.....	.....	.....	0.71	6.0
Baxter	67	— 5	31.2	3.44	.....
Bedford	72	— 2	35 2	1.49	T.
Belknap	67	— 1	33.8	1.54	5.5
Belleplaine	63	— 4	30.0	4.64	9.7
Bonaparte	66	1	33.3	1.86	0.5
Britt	60	— 9	27.2	1.69	12.2
Buckingham	.....	.....	.....	3.20	.....
Burlington	66	4	34.8	2.23	.....
Bussey	.....	.....	.....	1.95	2.0
Carroll	72	—10	30.2	2.97	2.0
Iowa—Cont'd.					
Carson	.....	.....	.....	1.19	0.5
Cedarfalls	64	— 7	29.0	1.50	T.
Cedar Rapids	64	— 3	30.3	2.37	5.5
Centerville	67	— 1	33.4	1.30	T.
Chariton	68	— 3	33.5	2.23	3.5
Charles City	55	—10	26.0	1.94	12.0
Chillicothe	.....	.....	.....	3.10	.....
Clarinda	77	— 3	35.6	1.07	1.2
Clearlake	57	—10	26.6	1.65	16.5
Clinton	60	0	29.2	3.24	15.5
College Springs	69	— 4	34.8	0.94	.....
Coon Rapids	68	— 7	32.6	3.53	T.
Corning	67	— 4	34.0	1.55	1.5
Cresco	46	—11	23.5	1.38	13.2
Cumberland	.....	.....	.....	2.12	T.
Danville	.....	.....	.....	1.94	0.5
Decorah	50	— 9	24.9	2.20	17.4
Delaware	58	— 5	27.1	2.36	9.7
Denison	80	— 9	32.7	1.80	T.
Desoto	66	— 3	33.2	2.64	2.6
Dows	63	— 8	28.5	3.13	5.8
Eldon	68	— 1	33.8	1.58	2.2
Elkader	60	— 5	28.4	1.96	11.5
Emmetsburg	.....	.....	.....	1.25	.....
Estherville	63	—10	26.4	1.43	12.8
Fairfield	67	0	32.7	1.81	... ..
Fayette	54	— 8	26.1	2.74	13.0
Fonda	71	— 8	29.8	5.15	5.8
Forest City	58	—10	26.8	1.43	12.5
Fort Dodge	70	— 6	30.6	4.20	.....
Fort Madison	.....	.....	.....	1.72	T.
Galva	70	— 8	30.3	1.13	.....
Gilman	.....	.....	.....	2.22	T.
Glenwood	73	— 4	36.7	0.90	T.
Grand Meadow [1]	48	— 6	26.2	1.69	15.0
Greene	60	— 8	28.4	1.57	.....
Greenfield	66	— 6	33.0	2.19	1.6
Grinnell	61	— 4	30.7	3.58	.....
Grinnell (near)	64	— 5	30.4	3.00	4.0
Griswold	.....	.....	.....	1.19	.....
Grundy Center	63	— 8	28.5	2.34	17.0
Guthrie Center	67	— 3	33.0	1.78	0.4
Hampton	63	— 8	28.0	2.97	17.2
Harlan	72	— 7	32.5	1.99	0.3
Hawkeye	.....	.....	.....	2.80	28.0
Hedrick	66	— 2	32.4	1.83	3.2
Hopeville	67	— 4	33.2	1.33	.....
Humboldt	66	— 8	30.2	2.23	6.0
Independence	60	— 7	27.0	1.02	9.3
Indianola	70	— 4	34.3	2.90	.....
Iowa City	63	— 3	30.5	3.32	2.0
Iowa Falls	62	— 7	27.7	2.80	.....
Keosauqua	67	2	33.8	1.71	3.5
Knoxville	69	— 3	33.4	1.44	T.
Lacona	.....	.....	.....	1.97	.....
Lansing	56	— 5	29.6	1.69	16.9
Larchwood	70	—10	31.0	1.07	10.5
Larrabee	67	—11	29.6	1.55	3.4
Leclaire	.....	.....	....	3.35	9.7
Lemars	70	— 8	32.0	1.35	2.5
Lenox	68	— 6	33.4	1.49	0.6
Logan	70	— 6	33.0	1.95	2.0
Maple Valley	.....	.....	.....	1.24	9.0
Maquoketa	63	— 2	30.1	2.34	10.5
Marshalltown	65	— 5	31.3	3.78	13.0
Monticello	54°	— 2	29.0	2.49	11.0
Mooar	65	2	33.2	1.64	.....
Mountayr	67	— 5	33.8	1.75	0.5
Mount Pleasant	70	0	29.9	1.30	.....
Mount Vernon *b*	64	— 5	29.4	2.90	8.4
Murray	.....	.....	.....	1.37	3.0
New Hampton	53	— 9	26.5	1.45	14.5
Newton	65	— 6	31.3	3.55	11.0
North McGregor	.....	.....	.....	2.08	10.5
Northwood	62	—10	27.2	1.43	.....
Odebolt	71	— 7	31.8	1.50	2.5
Ogden	68	— 6	31.7	2.09	3.0
Olin	61°	— 3°	30.4°	3.14	14.0
Onawa	76	— 6	34.3	1.40	3.8
Osage	52	—13	25.8	2.00	17.7
Osceola	69	— 4	33.0	1.80	T.
Oskaloosa	68	— 2	32.0	2.32	2.3
Ottumwa	62	1	34.4	1.30	3.0
Ovid	70	— 3	33.4	1.78	1.2
Pacific Junction	73	— 4	34.6	0.96	0.1
Pella	58	— 2	30.2	.....	.....
Plover	67	— 8	29.6	1.30	9.0
Redoak	78	— 2	37.8	1.31	.....
Ridgeway	52	—11	27.3	3.20	16.9
Rockwell City	68	— 7	32.6	1.81	2.0
Ruthven	63	—12	25.8	1.74	17.0
Sac City	70	— 8	30.0	1.61	.....
Scranton	67	— 5	32.5	2.82	1.0
Sheldon	66	—10	28.8	1.24	8.4
Sibley	69	—12	29.0	1.41	11.7
Sigourney	68	— 8	32.7	3.40	2.5

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Iowa—Cont'd.	°	°	°	*Ins.*	*Ins.*
Sioux Center	66	−10	30.2	1.17	6.5
Spencer	65	0	28.1	1.00	7.5
Spirit Lake	62	−11	26.0	1.10	11.0
Storm Lake	69	−10	29.0	1.96	7.1
Stuart	63	− 7	28.8	2.12	2.8
Thurman	70	− 2	35.2	0.84	T
Toledo	68	− 5	29.2	1.72	.....
Villisca	78	− 4	35.0	1.71	.....
Vinton *1	61	− 5	28.6	1.57	5.0
Wapello	81	− 1	31.5	3.13	.....
Washington	66	− 5	30.1	3.48	.....
Washta	.....	.....	.....	1.36	3.5
Waterloo	62	− 6	28.8	2.86	13.0
Waverly	59	− 7	28.8	2 97	17.8
Webster City	54	− 5	29.2	.....	.....
Westbend *1	59	− 8	27.6	1.94	11.0
Westbranch	60	0	29.6	1.74	.....
Whitten	62	− 8	28.0	0.45	5.5
Wilton Junction	61	1	30.2	4.17	13.0
Winterset	64	− 3	32.2	2.81	6.5
Woodburn	.....	.....	.....	1.74	1.5
Kansas.					
Abilene	78	11	41.2	0.54	T.
Achilles	.....	.....	.....	0.95	3.5
Altoona *3	81	1	40.9	1.14	T.
Anthony	.....	.....	.....	0.73	
Atchison *a*	79	4	39.2	0.94	1.2
Beloit	78	6	39 0	1.10	T.
Burlington	82	0	42.9	1.13	T.
Campbell	77	2	38.7	1.59	
Chanute	86	11	46.0	0.03	
Coburn *1	82	6	39.8	0.32	0.2
Colby	80	9	41.3	0.50	3.2
Columbus	82	10	44.4	2.38	T.
Coolidge	81	16	45.0	0.30	3.0
Cunningham	84	10	42.6	0.70	T.
Delphos	81	3	41.0	0.66	T.
Dresden	77	8	40.6	0.37	0.5
Ellinwood	84	6	41.6	0.20	T.
Emporia	78	.....	.....	1.35	
Englewood	94	11	46.4	0.68	0.5
Eureka	.....	.....	.....	0.71	T.
Eureka Ranch	82	6	41.6	0.65	0.5
Fallriver	88	0	45.4	1.19	T.
Fanning	71	− 3	38.9	0.98	
Frankfort	82	2	39.5	1.52	T.
Garden City	83	15	45.2	1.22	6.1
Garfield	.....	.....	.....	0.59	2.3
Grenola	87	2	44.6	0.88	T.
Hays	83	10	44.6	T.	T.
Horton	76	4	38.6	0.89	1.0
Hutchinson	85	9	45.1	0.61	0.2
Independence	86	8	45.7	1.13	T.
Lakin	83	15	44.7	0.20	2.0
Lawrence	79	3	41.0	1.24	T.
Lebo	79	3	41.6	1.05	T.
Little River	80	1	40.6	0.16	
Macksville	86	10	41.5	0.30	1.0
McPherson	84	5	42.9	0.38	*
Manhattan *b*	84	0	41.2	0.49	
Manhattan *c*	.....	.....	.....	0.50	T.
Marion	78	− 7	43.8	0.40	T.
Meade	85	16	43.0	0.63	1.0
Medicine Lodge	90	16	46.1	0.90	T.
Minneapolis	79	2	39.8	0.48	T.
Moran	82	6	42.7	1.73	0.2
Mounthope *1	81	13	43.5	0.55	
Ness City	84	14	42.7	0.56	2.0
Newton	84	0	43.0	0.65	T.
Norwich	86	10	45.8	0.86	
Oberlin	.....	.....	.....	1.00	1.5
Olathe	82	0	41.2	1.27	1.0
Osage City	82	− 5	41.6	1.36	
Oswego	90	10	47.6	1.59	
Ottawa	79	1	41.4	1.09	0.4
Phillipsburg	84	8	40.4	0.90	2.0
Pratt	84	12	43.0	0.82	T.
Rome *1	81	16	45.2	0.85	T.
Salina	80	1	40.3	0.48	T.
Scott	81	7	40.9	0.30	3.0
Sedan	89	5	45.2	0.72	
Seneca	79	2	39.0	1.97	0.3
Toronto	78	.....	.....	0.88	0.2
Tribune	77	14	41.4	0.50	3.0
Valley Falls	79	− 1	41.0	0.52	0.2
Viroqua	83	18	46.0	0.30	1.0
Wakeeney (near)	.....	.....	.....	2.14	0.7
Wallace	.....	.....	.....	0.54	2.8
Wamego *1	82	− 2	40.0	0.53	T.
Winfield	86	17	47.0	1.19	
Winona	.....	.....	.....	T.	T.
Yates Center	82	0	42.6	1.65	T.
Kentucky.					
Alpha *2	.....	10	43.9	4.07	9.0
Bardstown	74	8	42.2	2.40	0.5
Blandville	78	10	44.4	2.13	1.8

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Kentucky—Cont'd.	°	°	°	*Ins.*	*Ins.*
Bowling Green	75	12	43.4	2.74	1.0
Burnside	.....	.....	.....	3.66	1.5
Canton *1	79	12	47.6	1.11	3.1
Carrollton	65	8	39.6	1.46	T.
Catlettsburg	70	3	41.2	2.46	4.0
Earlington	77	10	44.0	2.33	0.2
Edmonton	78	10	44.2	3.97	8.4
Eubank	71	− 1	41.5	5.14	
Falmouth	.....	.....	.....	2.14	2.0
Fords Ferry	76	11	44.4	1.76	T.
Frankfort	68	10	43.8	2.37	1.5
Greensburg	74	13	43.2	3.63	0.2
Henderson	73	10	42.2	1.52	T.
Hopkinsville	76	21	45.4	1.73	2.0
Irvington	72	8	41.3	1.93	T.
Jackson	67	.....	44.4	1.94	8.6
Leitchfield	79	9	41.9	2.09	3.0
Loretto	71	5	40.6	2.04	0.2
Marrowbone	72	8	43.4	3.39	8.0
Maysville	69	4	40.2	2.18	3.8
Middlesboro	73	14	41.2	.....	.....
Mount Hermon	68	7	42.3	4.07	7.5
Mount Sterling	65	5	39 4	3.96	9.0
Owensboro	77	11	44.4	1.24	T.
Owenton	69	4	39.2	3.03	4.5
Paducah *a*	.....	.....	.....	1.67	T.
Paducah *b*	81	14	47.0	1.61	T.
Pikeville	71	10	43.4	3.58	15.9
Princeton	78	13	45.0	2.01	T.
Richmond	69	0	40.3	2.18	3.6
St. John	71	8	42.7	2.37	1.5
Scott	65	4	37.7	1.94	0.9
Shelby City	71	− 3	40.5	4.32	6.0
Shelbyville	71	8	41.8	1.62	1.0
Vanceburg	67	6	40.5	4.70	3.0
Warfield	70	10	44.8	3.00	19.0
Williamsburg	74	9	45.7	3.84	10.0
Louisiana.					
Abbeville	84	31	60.8	5.35	
Alexandria	89	30	58.8	5.46	
Amite	89	32	59.0	5.33	
Bastrop	89	28	56.2	6.83	2.0
Baton Rouge	87	31	60.2	6.08	
Calhoun	85	28	54.4	4.33	4.0
Cheneyville *c*	88	37	57.8	3.22	
Clinton	88	32	59.2	5.98	
Como	87	30	55.6	6.33	1.0
Donaldsonville	83	33	57.7	8.38	
Emilie	84	34	59.2	6.54	
Farmerville	86	25	53.6	7.44	4.0
Franklin	81	33	60.1	7.14	
Grand Coteau	85	31	59.6	4.39	
Hammond	87	32	60.4	7.12	
Houma	80	32	60.8	3.60	
Jeanerette	80	31	58.7	7.22	
Jennings	83	29	58.8	3.55	
Lafayette	84	32	59.0	3.77	
Lake Charles	84	.....	.....	3.93	
Lake Providence	86	28	55.7	4.92	2.0
L'Argent	84	30	56.0	3.67	T.
Lawrence	86	36	60.2	4.41	
Libertyhill	91	26	56.8	4.83	.....
Mansfield	89	27	56.2	5.12	2.0
Melville	88	31	59.0	4.45	
Minden	90	25	54.8	6.43	
Monroe	93	30	55.9	3.86	1.0
Montgomery	85	32	58.2	7.85	T.
New Iberia	78	33	58.6	6.60	
Oakridge	89	29	56.0	8.13	2.0
Opelousas	84	31	58.5	4.44	
Oxford	88	25	55.6	6.69	T.
Paincourtville	88	35	60.4	7.16	
Plain Dealing	88	24	54.2	5.04	3.0
Prevost	87	34	60.4	6.49	
Rayne	84	30	60.2	4.61	
Robeline	88	.....	.....	7.20	T.
Ruston	87	28	55.0	4.72	2.0
Schriever	90	33	60.8	6.84	
Southern University	82	31	57.8	5.00	
Sugar Ex. Station	81	37	60.2	5.23	
Sugartown	83	32	59.4	4.32	
Venice	80	41	60.0	8.39	
Wallace	87	33	59.8	7.14	
White Sulphur Springs	85	31	58.1	6.39	
Maine.					
Bar Harbor	56	3	30.0	8.57	7.0
Belfast *6	54	4	29.3	7.31	13.0
Bemis	46	−20	20.0	4.95	30.0
Calais	50	− 5	26.6	5.65	23.0
Carmel	48	− 5	26.6	7.10	.....
Cornish *1	50	− 2	24.6	6.68	20.5
Fairfield	52	− 5	25.3	4.75	3.0
Farmington	47	−12	22.4	7.04	24.5
Flagstaff	47	−30	18.0	3.90	32.5
Gardiner	52	1	27.6	7.23	12.0
Kineo	40	−20	18.0	3.90	29.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Maine—Cont'd.	°	°	°	*Ins.*	*Ins.*
Lewiston	52	0	26.6	8.01	21.6
Mayfield	48	− 8	21.6	5.65	28.0
North Bridgton	50	− 5	24.2	6.55	20.8
Orono	52	−10	26.6	5.47	16.5
Petit Manan *1	45	6	28.6	.....	.....
Rumford Falls	50	−14	22.1	5.82	32.2
Winslow	56	− 8	28.7	5.21	13.5
Maryland.					
Annapolis	66	14	39.6	4.05	9.5
Bachmans Valley	62	4	34.4	4.12	17.0
Boettcherville	68	− 8	37.8	3.48	18.0
Boonsboro *a*	65	3	35.8	3.60	20.0
Cambridge	70	15	41.7	.....	.....
Charlotte Hall	69	11	39.6	2.05	3.0
Chase	67	9	38.2	2.45	10.0
Chewsville	65	− 7	35.8	2 71	10.0
Clearspring	68	5	34.4	3.87	17.8
Coleman	67	.....	.....	2.63	8.0
Collegepark	67	6	38.8	1.57	9.5
Cumberland	63	6	36.8	2.95	18.0
Darlington	65	6	36.6	3.55	10.5
Deerpark	56	− 2	32.4	3.15	27.0
Easton	74	11	39.2	3.17	.....
Ellicott City	66	3	36.9	2.61	9.4
Frederick	67	3	37.8	3.71	14.0
Frostburg	60	2	35.2	4.08	23.0
Grantsville	57	− 2	31.0	4.14	30.0
Greatfalls	67	5	36.8	2.18	9.0
Greenspring Furnace	66	0	37.1	3.81	23.0
Hagerstown	65	9	36.6	4.67	18.0
Hancock	66	− 4	35.8	3.24	16.0
Jewell	66	10	38.0	2.77	4.0
Johns Hopkins Hospital	67	9	36.7	3.11	10.2
Laurel	68	3	36.6	3.51	13.0
McDonogh	63	9	36.4	3.83	.....
Mount St. Marys Coll	65	2	35.8	2.50	18.0
Pocomoke	67	15	42.4	2.67	.....
Prince Fredericktown	71	11	40.6	2.20	4.5
Princess Anne	68	13	40.6	3.44	5.3
Queenstown	65	12	38.1	3.73	9.0
Rockhall *b*	65	13	39.4	2.72	5.0
Sandy Point	65	15	44.6	.....	.....
Sharpsburg	67	1	37.0	3.40	15.9
Smithsburg *a*	64	− 6	35.6	3.07	19.0
Smithsburg *b*	64	4	35.6	4.38	14.8
Solomons	68	16	41.0	2.90	5.0
Sudlersville	67	11	40.2	3.41	5.0
Sunnyside	56	− 4	30.6	5.05	26.8
Takoma Park	69	9	38.6	2.99	13.0
Taneytown	65	3	36.6	2.91	10.0
Westernport	60	0	33.4	2.83	19.8
Westminster	62	3	34.2	4.78	17.0
Woodstock	66	4	36.8	3.15	12.0
Massachusetts.					
Amherst	51	3	29.6	6.11	11.5
Attleboro	.....	.....	.....	5.73	.....
Bedford	54	4	30.2	5.17	6.0
Bluehill (summit)	55	3	31.2	4.62	10.0
Cambridge	59	6	32.8	4.86	.....
Chestnuthill	59	6	33.2	5.08	6.2
Cohasset	.....	.....	.....	4.31	2.5
Concord	57	6	30.9	4.40	9.3
Dudley *1	53	5	30.7	6.67	.....
East Templeton *1	49	0	26.6	4.23	10.5
Fallriver	54	7	33.6	4.62	5.5
Fiskdale	.....	.....	.....	6.31	6.0
Fitchburg *a* *1	52	3	28.0	5.94	14.5
Fitchburg *b*	53	3	29.3	6.55	12.0
Framingham	59	6	34.2	6.24	3.0
Groton	52	2	28.1	6.91	16.5
Hyannis *1	53	10	33.0	3.01	T.
Jefferson	.....	.....	.....	6.35	12.5
Lawrence	56	5	30.7	5.53	13.5
Leeds	52	− 9	28.4	5.00	13.0
Leominster	.....	.....	.....	6.88	11.8
Longplain	.....	.....	.....	4.03	.....
Lowell *a*	53	5	31.1	6.57	.....
Lowell *b*	56	4	30.6	.....	.....
Ludlow Center	46	0	26.1	5.75	11.0
Middleboro	58	7	32.6	4.29	1.6
Monson	54	4	31.4	5.88	12.0
New Bedford *a*	56	11	34.8	3.73	.....
Pittsfield	48	− 1	25.9	3.88	9.0
Plymouth *1	62	7	30.6	3.67	1.0
Princeton	.....	.....	.....	5.47	14.5
Provincetown	55	11	33.8	3.17	.....
Somerset *1	62	5	34.0	5.97	5.0
South Clinton	.....	.....	.....	6.73	12.5
Springfield Armory	52	8	31.2	5.85	11.5
Sterling	.....	.....	.....	6.22	11.5
Taunton *c*	58	7	33.0	5.42	.....
Webster	.....	.....	.....	5.91	8.5
Westboro	54	5	32.3	8.25	8.5
Weston	57	5	32.7	5.20	8.8
Williamstown *1	42	3	26.7	3.14	14.0
Winchendon	.....	.....	.....	5.22	13.0

TABLE II.—*Climatological record of voluntary and other cooperating observers.*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Massachusetts—Cont'd.	°	°	°	*Ins.*	*Ins.*
Worcester[b]	54	4	31.0	6.27	9.0
Michigan.					
Adrian	46	— 3	25.8	2.91	11.8
Agricultural College	45	—10	23.6	1.88	12.9
Allegan	55	7	32.4	.....	.....
Alma	47	—10	23.4	2.00	13.0
Ann Arbor	46[j]	— 5[h]	23.6[f]	2.73	16.3
Arbela	45	— 6	24.0	3.85	16.0
Baldwin	48	—16	21.7	0.82	8.0
Ball Mountain	45	— 5	23.5	2.13	17.7
Battlecreek	46	— 2	25.6	2.75	12.5
Bay City	49	— 4	23.0	1.39	9.0
Berlin	43	—14	22.5	2.49	21.7
Berrien Springs	50	— 2	28.8	3.15	21.5
Big Point Sable[*10]	40	8	27.6	.....	.....
Big Rapids	44	—10	22.8	1.60	13.5
Boon	42	—14	17.7	2.88	27.3
Calumet	48	— 5	19.2	1.04	13.0
Carsonville	42	—14	21.4	1.83	11.0
Charlevoix	45	— 5	21.9	1.30	7.0
Cheboygan	50	—12	21.2	1.40	14.0
Clinton	48	— 5	26.5	2.45	14.5
Coldwater	48	— 3	26.6	1.82	6.0
Eagle Harbor	47	— 7	18.2	1.00	10.0
East Tawas	49	— 8	22.5	1.35	.....
Eloise	46	— 4	25.8	2.45	20.8
Ewen	50	—20	21.6	1.40	14.0
Fairview	43	— 3[d]	25.6	1.38	13.8
Fitchburg	46	—11	24.1	4.46	33.5
Frankfort[k]	42	2	21.8	1.15	11.5
Gladwin	47	—14	23.6	2.00	10.0
Grand Rapids	47	3	26.8	2.02	19.0
Grape	48	— 3	26.6	2.61	19.5
Grayling	44	—20	19.0	1.40	14.0
Hanover	46	— 6	25.2	2.62	21.5
Harbor Beach	43	—10	23.0	2.25	7.5
Harrison	47[f]	—12[f]	21.5[f]	0 85	8.5
Harrisville	47	— 5	22.1	2.05	20.5
Hart	47	— 2	25.1	2.10	16.0
Hastings	47	— 2	24.8	2.16	12.7
Hayes	46	—13	22.0	3.00	16.0
Highland Station	.....	.....	.....	3.08	21.0
Hillsdale	47	— 4	23.6	2.55	18.5
Holland[*10]	46	9	29.6	.....	.....
Howell	45	—11	24.5	3.23	21.0
Humboldt	48[d]	—29	13.4	0.33	1.0
Ionia	48	— 5	27.0	1.20	11.0
Iron Mountain	52	—12	20.4	0.79	8.6
Iron River	46	—28	14.0	1.20	12.0
Ishpeming	54	—15	18.0	1.75	17.5
Ivan	46	— 8	20.4	1.41	13.0
Jackson	48	— 3	26.4	3.70	17.5
Jeddo	43	— 7	21.8	2.58	16.3
Kalamazoo	46	— 4	26.4	1.98	15.0
Lake City	48	—17	21.2	0.80	8.0
Lansing	47	— 4	25.0	2.20	16.5
Lapeer	47	— 5	25.1	0.86	9.0
Lathrop	50	—16	16.5	1.70	17.0
Lincoln	46	—18	20.6	1.30	13.0
Ludington	44	— 1	24.8	0.65	7.0
Luzerne	46	—19	19.6	1.91	13.0
Mackinaw	49	— 8	21.4	0 60	6.0
Madison	46	— 5	26.7	1.89	9.8
Mancelona	43	—10	19.8	1.00	10.0
Manistee	43	0	23.8	1.85	11.5
Manistique	45	— 7	21.0	0.94	9.0
Menominee	46	— 7	19.0	0.60	6.0
Middle Island[*10]	44	— 8	23.4	.....	.....
Midland	48	—12	22.9	0.80	8.0
Mottville	49	— 4	26.6	2.28	6.5
Mount Clemens	45	— 2	24.4	2.18	.....
Mount Pleasant	43	—10	23.8	0.85	8.0
Muskegon	42	4	25.2	1.45	12.0
Newberry	50	—18	15.9	1.68	17.0
North Manitou Island[*10]	40	8	24.8	.....	.....
Northport	50[e]	— 4[i]	24.0[e]	1.70	17.0
Old Mission	43	— 2	22.3	.....	.....
Olivet	45	— 3	25.0	3.10	16.5
Omer	45	—15	19.4	0.45	4.5
Ovid	46	— 7	23.7	2.38	15.0
Owosso	48	— 6	24.6	2.20	7.0
Petoskey	46	— 4	22.1	1.10	11.0
Plymouth	48[e]	— 7[f]	25.5[e]	1.85	18.0
Port Austin	45	5	23.4	0.50	.....
Reed City	45	—10[e]	23.4	1.80	15.0
Rogers	48	—10	21.0	1.15	10.0
Saginaw	44	— 3	24.6	2.34	13.0
St. Ignace	52	— 4	21.6	0.60	6.0
St. Johns	48	— 2	25.7	2.40	21.0
St. Joseph	56	1	30.0	1.52	4.0
Sidnaw	50	—15	21.0	1.40	14.0
Somerset	46	— 5	24.8	1.80	13.0
South Haven	46	10	31.1	2.80	9.0
Thomaston	52	—23	15.5	.....	.....
Thornville	44	— 2	23.4	1.28	13.0
Thunder Bay Island[*10]	47	0	24.0	.....	.....
Traverse City	48	— 3	22.2	2.00	20.0
Vandalia	49	— 3	27.0	2.44	14.1
Vassar	44	—10	23.2	1.88	11.3
Wasepi	49	3	26.6	2.52	16.0
Waverly	44	— 2	24.2	1.13	10.6
Wetmore	52	—23	16.2	1.40	14.0
Whitecloud	45	— 7	24.0	1.15	10.5
Whitefish Point	40	— 9	16.5	.....	.....
Ypsilanti	46	— 5	25.8	3.46	19.8
Minnesota.					
Ada	51	—15	20.0	1.00	2.5
Albert Lea	56	—11	24.2	.....	.....
Alexandria	53	—12	23.8	0.54	5.4
Ashby	54	—14	24 0	1.30	14.5
Beardsley	59	—13	24.0	2.60	18.0
Bemidji	51	—18	20.8	0.66	6.6
Bird Island	61	—11	25.5	2.11	21.1
Blooming Prairie	49	—14	25.0	1.05	10.5
Brainerd	52[e]	—14[e]	19.8[e]	0.75	.....
Caledonia	44	—12	23.2	1.77	16.0
Camden	69	—12	27.2	1.41	17.5
Collegeville	55	—10	25.6	1.34	12.6
Crookston	51[e]	—15[h]	20.8[e]	1.33	9.5
Currie[e]	68	—12	28.4	.....	.....
Deephaven	.....	.....	.....	1.75	.....
Detroit City	53	—17	19 8	1.04	8.2
Faribault	57	—12	25.6	1.33	17.7
Farmington	48	—16	23.4	1.80	18.0
Fergus Falls	54	—15	22.9	1.10	10.8
Glencoe	58	— 8	26.0	0.90	.....
Grand Meadow	49	—13	23.2	2.49	26.0
Hallock	53	—21	15.3	0.85	.....
Koochiching	52	—20	15.0	0.20	.....
Lake City	50	0	26.8	1.30	13.0
Lakeside	60	—11	24.6	1.17	14.5
Lake Winnibigoshish	52	—20	19.0	0.26	5.1
Leech	54	—20	19.0	0.58	6.3
Leroy	55	—12	26.7	1.03	10.3
Long Prairie	53	—15	23.6	0.95	9.9
Luverne	66	—11	28.3	1.40	10.8
Lynd	63	—15	25.1	1.42	16.0
Mapleplain	55	—11	25.3	2.10	21.6
Milaca	54	—15	24.6	0.80	8.0
Milan	62	—13	26.2	2.30	22.0
Minneapolis[a]	53	—11	24.1	1.53	15.3
Minneapolis[b 1]	47[e]	—10	25.2	1.27	14.1
Minnesota City	.....	.....	.....	1.37	9.5
Montevideo	64	—15	25.2	1.76	18 8
Morris	54	—15	24.8	2.07	21.0
Mount Iron	51	—18	17.4	0.15	1.5
Newfolden	58	—22	16.8	0.63	8.4
New London	52	— 6	22.2	0.77	7.0
New Richland[*1]	54	— 8	26.3	.....	.....
New Ulm	61	— 9	26.6	2.38	30.3
Park Rapids	50	—17[e]	19.5	1.03	10.3
Pine River	53	—19	18.1	0.76	11.2
Pipestone	59	— 9	26.6	1.72	17.0
Pleasant Mounds	67	—13	25.1	1.38	7.4
Pokegama Falls	53	—26	18.0	0.39	5.5
Redwing	.....	.....	.....	1.09	2.2
Reeds	.....	.....	.....	1.66	8.6
Rolling Green	60	—10	25.6	2.40	24.0
St. Charles	49	—11	23.8	1.85	18.5
St. Cloud	55	—11	24.7	1.40	13.0
St. Peter	55	— 7	27.3	2.81	27.0
Sandy Lake Dam	55	—20	19.7	0.68	8.9
Shakopee	55	—12	27.0	1.33	13.0
Tower	55	—30	21.2	0.30	3.0
Two Harbors	58	—15	20.2	0.49	8.0
Wabasha[*1]	48	—10	26.0	1.59	16.5
Willmar	57	—12	22.2[e]	1.35	8.5
Willow River	54	—16	20.6	0.68	8.1
Winnebago City	50	— 2	26 0	1.94	23.5
Worthington	66	—13	27.6	2.81	10.6
Zumbrota[b]	44[e]	—14	25.8	.....	.....
Mississippi.					
Aberdeen	78	20	48.0	3.20	7.0
Americus	88	31	58.8	6.28	
Austin	81	21	51.9	2.20	0.8
Batesville	82	24	48.6	3.17	
Bay St. Louis	83	35	58.6	6.84	
Biloxi	77	36	59.3	7.95	
Booneville	80	22	49.8	4.05	3.4
Canton	84	30	55.0	4.97	
Columbus[a]	.....	.....	.....	8.84	6.0
Columbus[b]	83	28	51.7	7.15	.....
Corinth	.....	24	.....	2.59	
Crystalsprings	87	30	55.4	3.27	
Edwards	84	30	55.6	4.30	1.0
Fayette	84	29	55.4	4.05	T.
Greenville[a]	81	29	53.8	5.74	1.0
Greenville[b]	85	28	53.2	5.64	1.5
Hattiesburg	84	33	57.2	5.05	
Holly Springs	80	32	48.8	2.55	1.5
Kosciusko	85	28	53.8	6.50	T.
Lake	81	25	51.7	4.57	
Logtown	86	35	60.2	6.34	
Louisville	84	25	51.4	6.04	4.0
Macon	82	25	53.0	5.58	.....
Magnolia	85	31	58.1	5.63	T.
Natchez	90	32	58.6	4.00	
Okolona[e]	89	21	51.4	3.67	
Palo Alto	85	26	50.4	7.25	2.0
Pontotoc	85	22	50.5	3.85	6.0
Port Gibson	90	29	54.8	3.03	.....
Ripley	80	21	48.6	3.79	2.5
Stonington[*1]	84	32	56.4	.....	.....
Tupelo	.....	.....	.....	4.46	
University	84[e]	24[e]	50.7[e]	3.13	1.5
Walnutgrove	87	30	56.8	3.85	T.
Watervalley	86	33	56.0	3.52	0.3
Waynesboro	85	29	56.6	4.77	T.
Windham	86	28	55.0	5.04	T.
Woodville	84	30	57.4	6.30	
Yazoo City	89	30	54.7	5.10	T.
Missouri.					
Appleton City	80	5	42.6	0.60	T.
Arlington	.....	.....	.....	1.70	T.
Arthur[*3]	.....	5	40.4	1.06	
Avalon	73	1	38.3	1.34	T.
Bagnell	.....	.....	.....	2.05	.....
Bethany	72	0	35.4	1.64	T.
Birchtree	82	10	46.0	1.41	T.
Boonville	.....	.....	.....	2.12	
Brunswick	73	2	35.2	1.29	T.
Carrollton	72	5	38.1	1.78	
Conception	70	— 4	37.4	0.80	2.0
Cook Station	82	1	43.8	2.30	0.5
Cowgill[*5]	74	4	38.4	2.15	T.
Darksville	65	2	34.3	0.52	0.2
Downing	.....	.....	.....	1.70	T.
East Lynne[*3]	.....	6	38.0	1.34	T.
Edgehill[*5]	76	10	40.8	1.77	T.
Edwards	79	1	43.4	1.21	T.
Eightmile[*1]	76	12	40.8	.....	.....
Eldon	79	— 2	42.0	1.18	2.0
Elmira	77	— 2	37.5[e]	0.55	T.
Fairport	.....	.....	.....	1.84	T.
Fayette	74	1	38.4	1.27	0.2
Fulton	76	4	40.2	1.57	T.
Galena	.....	.....	.....	1.06	
Gallatin[*1]	71	1	37.7	1.22	0.2
Gayoso	81	16	47.6	2.19	T.
Glasgow	73	2	38.4	1.24	
Gorin	.....	.....	.....	1.39	T.
Halfway	83	8	46.0	1.23	T
Harrisonville	80	5	38.6	1.59	0.3
Hazlehurst	.....	.....	.....	1.66	0.4
Hermann	.....	.....	.....	1.32	
Houston	82	9	46.2	0.93	T.
Houstonia (near)	.....	.....	.....	1.36	0.2
Irena	.....	.....	.....	1.74	2.0
Ironton	83	6	42.2	2.30	0.5
Jackson[*2]	74	13	41.8	1.96	T.
Jefferson City	79	7	41.8	0.90	
Kidder	74	0	36.8	1.79	0.3
Lamar	84	8	45.3	1.61	T.
Lamonte	.....	.....	.....	2.13	T.
Lebanon	81	11	44.6	1.90	
Lexington	80	6	40.6	1.84	T.
Liberty	78	4	38.0	0.66	T.
Louisiana	75	2	39.5	1.51	T.
McCune[*1]	72	2	38.2	1.23	0.8
Macon	72	4	37.4	0.97	T.
Marblehill	83	8	44.5	1.72	0.5
Marshall	74	2	36.8	1.35	T.
Maryville	72	— 4	34.1	1.87	0.5
Mexico	75	2	38.9	1.65	0.6
Miami[*5]	71	6	37.4	1.38	0.2
Mineralspring	81	7	43.6	1.46	T.
Montreal	81	7	42.6	1.73	T.
Mount Vernon	74	10	44.5	0.40	T.
Neosho	85	10	45.8	1.64	
Nevada	.....	.....	.....	1.07	T.
New Haven	72	9	41.2	2.02	T.
New Madrid	73	16	47.0	3.41	T.
New Palestine	75	6	40.7	1.18	T
Oakfield	80	7	42.4	1.81	0.8
Olden	82	8	44.0	1.39	T.
Oregon[a]	74	1	37.7	1.85	0.8
Oregon[b]	77	2	39.9	1.57	0.6
Palmyra[*5]	66	6	35.8	1.05	0.4
Phillipsburg[*1]	78	13	42.4	1.51	
Pickering[*3]	76	2	32.2	1.43	0.8
Poplarbluff	78	17	48.0	1.33	T.
Potosi	80	1	40.9	1.81	1.0
Princeton	66	— 3	34.0	1.71	2.0
Richmond	80	5	39.6	2.02	T.
Rockport	.....	.....	.....	1.04	1.0
Rolla	.....	.....	.....	1.53	0.3
St. Charles	73	8	41.0	1.16	2.0
St. Joseph	.....	.....	.....	1.18	T.

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Missouri—Cont'd.	°	°	°	*Ins.*	*Ins.*
Sarcoxie *2	.....	10	41.0	0.98	T.
Sedalia	75[4]	5[c]	40.8[4]	0.75	T.
Seymour	79	8	42.0	1.73	T.
Shelbina	.....	.....	.....	1.20	T.
Sikeston	82	13	46.1	2.72	
Steffenville	65	0	35.9	1.16	0.5
Sublett	64	0	32.7	1.70	0.5
Trenton	66	0	36.6	1.84	T.
Unionville	68	— 1	35.2	1.71	1.0
Vichy	78	7	43.6	1.03	0.2
Warrensburg	78	5	41.7	1.31	T.
Warrenton	75	6	37.8	1.80	0.5
Wheatland	.....	.....	.....	1.59	T.
Willowsprings	84	9	45.1	1.28	
Windsor	75	5	41.3	1.06	
Wylie	88	11	47.8	1.21	
Zeitonia	82	8	45.0	2.06	0.3
Montana.					
Adel	64	—16	33.6	1.43	12.5
Boulder	64	—14	35.7	0.58	5.8
Bozeman	66	— 2	37.1	0.89	6.0
Canyon Ferry	68	0	40.0	0.59	6.5
Chinook	63	—15	29.9	1.00	10.0
Columbia Falls	63	6	38.6	0.54	.....
Corvallis	74	17	42.5	0.35	3.5
Crow Agency	75	— 3	36 4	0.10	1.0
Dearborn Canyon	63	— 8	36.6	0.85	7.0
Dell	63	— 1	33.5	0.40	4.0
Dillon	66	— 8	36.2	1.23	12.6
Dupuyer	66	—13	34.4	1.10	11.0
Fort Logan	64	—14	32.5	0.79	7.9
Glasgow	69	—25	29.4	1.47	.....
Glendive	70	—17	29.4	1.50	15.0
Glenwood	67	— 6	36.4	0.56	.....
Greatfalls	68	— 6	37.8	0.53	5.3
Kipp	63	—19	32.5	0.62	5.8
Lewiston	70	—10	35.0	.....	.....
Livingston	63	— 4	34.9	0.44	4.4
Manhattan	65	—17	37.8	0.92	9.2
Martinsdale	70	— 8	35.8	0.40	4.0
Marysville	60	—10	32.8	0.60	6.0
Missoula	72	12	42.4	0.37	0.5
Ovando	67	— 5	32.6	1.15	8.8
Parrot[s]	65	1	33.8	0.57	3.9
Plains	65	16	41.0	0.20	T.
Poplar	68	—19	27.5	2.86	23.0
Redlodge	58	—10	31.5	1.62	16.2
Ridge	63	— 9	33.6	0.70	7.0
St. Pauls	68	—10	33.2	1.04	9.0
Troy	69	16	41.0	3.02	2.0
Twin Bridges	66	—10	35.2	.....	.....
Utica	70	—12	34.4	0.21	2.2
Yale	67	— 5	33.9	0.80	8.0
Nebraska.					
Agee	.....	.....	.....	0.93	4.0
Albion	75	— 6	34.0	0.60	2.0
Alliance	.....	.....	.....	0.10	1.0
Alma	90	— 4	40.2	0.56	T.
Ansley	78	— 3	35.7	0.48	0.5
Arapaho *1	78[d]	8	41.7[4]	0.25	T.
Arborville *1	80	— 4	35.0	0.37	T.
Ashland *a*	79	— 4	37.3	0.44	T.
Ashland *b* *1	75	— 3	35.8	0.69	0.7
Ashton	.....	.....	.....	0.53	0.4
Auburn	75	0	37.9	0.91	1.3
Aurora *1	76	— 2	36.6	0.69	T.
Bartley	.....	.....	.....	0.67	
Beatrice	75	0	37.9	1.10	T.
Beaver	86	8	41.4	0.62	T.
Bellevue	.....	.....	.....	2.25	1.0
Benedict	.....	.....	.....	0.74	
Benkleman	.....	.....	.....	0.20	2.0
Blair	77	— 6	34.1	1.29	1.0
Bluehill	.....	.....	.....	0.72	T.
Bradshaw	.....	.....	.....	0.67	
Brokenbow *1	74	0	34.0	0.51	T.
Burwell	.....	.....	.....	0.31	0.5
Callaway	78	— 1	37.2	0.47	1.0
Camp Clarke	76	2	37.0	0.25	2.0
Central City	.....	.....	.....	0.60	
Chester	.....	.....	.....	1.68	
Clatonia	.....	.....	.....	0.75	
Columbus	78	— 6	36.0	0.71	
Crete	77	—11	34.2	0.81	T.
Culbertson	.....	.....	.....	0.78	1.6
Curtis	74	4	40.2	1.65	
David City	76	— 5	35.0	1.30	2.0
Dawson	81	1	38.9	1.00	1.5
Eden	.....	.....	.....	1.13	2.0
Edgar *a*	.....	.....	.....	0.85	
Ewing	.....	.....	.....	0.99	0.2
Fairbury	81	1	43.6	1.12	T.
Fairfield	80	0	41.6	1.50	T.
Fairmont	80	— 3	36.8	0.50	T
Fort Robinson	75	— 7	34.9	0.27	2.7
Franklin	81	4	39.0	0.39	
Nebraska—Cont'd.	°	°	°	*Ins.*	*Ins.*
Fremont	78	— 6	35.4	1.34	3.0
Geneva	78	— 1	37.0	0.63	T.
Genoa	77	— 5	35.8	0.58	
Gering	75	— 5	37.4	0.26	2.1
Gordon	.....	.....	.....	0.10	
Gothenburg	75	1	37.4	0.82	2.0
Grand Island *a*	.....	.....	.....	0.42	T.
Grand Island *b*	81	— 3	37.6	0.68	1.2
Grand Island *c*	80	— 3	36.2	0.52	0.5
Greeley	.....	.....	.....	0.61	T.
Haigler	.....	.....	.....	0.25	2.5
Hartington	71	—10	30.2	2.34	3.5
Harvard	77	— 2	36.8	0.86	T.
Hastings *1	78	0	37.4	0.52	0.2
Hayes Center	.....	.....	.....	0.46	3.7
Hay Springs	76	— 1	37.8	0.59	4.7
Hebron	81	1	38.6	1.49	T.
Hickman	.....	.....	.....	0.40	
Hooper *1	74	— 5	35.0	1.16	1.8
Imperial	75	— 5	40.2	1.08	17.5
Johnstown	.....	.....	.....	0.70	3.0
Kearney	.....	.....	.....	0.40	
Kennedy	79	— 8	34.8	0.72	6.0
Kimball	74	4	37.0	0.25	2.5
Kirkwood *1	74	— 6	32.3	0.58	4.0
Laclede	79	— 5	35.9	0.53	T.
Lexington	83	0	37.0	0.60	1.0
Lincoln *d*	78	10	40.8	0.94	T.
Lodgepole	76	0	36.6	T.	T.
Loup	.....	.....	.....	0.44	
Lynch	80	— 8	34.2	0.77	3.8
Lyons	.....	.....	.....	1.14	1.6
McCook	.....	.....	.....	0.16	1.0
McCool	.....	.....	.....	0.55	
Madison	74	— 7	34.9	1.06	2.0
Madrid *5	78	2	40.0	0.20	
Marquette	.....	.....	.....	0.64	T.
Mason City	.....	.....	.....	0.42	1.0
Merriman	.....	.....	.....	T.	T.
Minden *a*	81	1	38.2	1.35	0.2
Minden *b*	.....	.....	.....	1.06	.....
Monroe	.....	.....	.....	1.36	T.
Nebraska City *b* *1	70	— 2	37.6	0.30	1.0
Nebraska City *c*	74	2	38.8	0.60	.....
Nemaha *1	74	0	36.3	1.37	1.0
Nesbit	74	— 4	35.2	0.45	3.0
Norfolk	74	—10	32.8	1.28	2.0
North Loup	77	— 4	36.3	0.81	T.
Oakdale	73	— 7	33.6	0.77	0.9
Odell	.....	.....	.....	0.65	
O'Neill	75	—10	35.0	0.75	2.5
Ord	.....	.....	.....	0.29	
Osceola	.....	.....	.....	0.72	
Ough	.....	.....	.....	0.20	2.0
Palmer *2	84	— 5	39.2	0.90	
Palmyra *1	74	— 2	34.5	1.13	
Plattsmouth *a*	.....	.....	.....	0.50	2.0
Plattsmouth *b*	.....	.....	.....	1.56	3.0
Pleasanthill	.....	.....	.....	0.31	T.
Ravenna *a*	80	0	36.7	0.37	0.5
Redcloud *b* *1	78	8	36.2	1.13	T.
Republican *1	76	6	36.9	0.80	
Rulo	.....	.....	.....	1.35	1.0
St. Libory	.....	.....	.....	0.19	T.
St. Paul	77	— 3	36.6	0.26	T.
Salem *1	70	0	37.9	.....	.....
Santee	74	— 9	34.2	1.60	7.0
Sargent	.....	.....	.....	0.32	2.0
Schuyler	.....	.....	.....	1.61	
Seneca *1	72	— 2	32.1	0.10	1.0
Seward	.....	.....	.....	0.89	
Smithfield	.....	.....	.....	0.45	
Spragg	.....	.....	.....	0.18	1.8
Springview	74	— 9	34.0	0.20	2.0
Stanton *1	73	— 8	32.6	0.98	1.2
State Farm	79	— 3	38.0	0.67	.....
Strang	.....	.....	.....	0.82	T.
Stratton	.....	.....	.....	0.38	
Superior *5	80	4	38.0	0.60	
Syracuse	.....	.....	.....	0.45	1.5
Tablerock	.....	.....	.....	1.02	1.0
Tecumseh *b*	74	0	36.2	0.65	0.2
Tecumseh *c*	.....	.....	.....	1.11	1.4
Tekamah	78	— 6	36.0	1.35	3.0
Thedford	.....	.....	.....	0.30	3.0
Turlington	74	— 2	35.8	0.48	0.5
Valentine	74	— 4	34.9	0.47	2.0
Wakefield	71	— 9	32.9	1.34	0.7
Wauneta	.....	.....	.....	0.79	0.2
Weeping Water *1	70	— 5	32.8	0.84	0.5
Wellfleet	.....	.....	.....	0.85	1.0
Westpoint	72	— 8	35.4	1.34	5.0
Wilber *1	78	2	37.7	0.76	T.
Willard	.....	.....	.....	0.12	0.8
Wilsonville *1	78	4	37.8	0.80	1.0
Winnebago	.....	.....	.....	0.52	0.1
Nebraska—Cont'd.	°	°	°	*Ins.*	*Ins.*
Wisner	.....	.....	.....	0.97	1.5
Wymore *1	63	— 4	32.4	0.63	T.
Nevada.					
Battle Mountain *1	80	26	46.0	0.10	1.0
Belmont	.....	.....	.....	0.46	3.5
Beowawe *5	72	17	46.3	0.20	2.0
Candelaria	81	17	48.8	0.15	1.5
Carlin *1	72	18	39.2	0.50	5.0
Carson City	75	19	46.0	0.88	3.7
Clover Valley	.....	.....	.....	0.31	
Cranes Ranch	.....	.....	.....	0.22	.....
Duck Valley	69	11	42.8	0.53	5.0
Elko *1	72	20	35.5	.....	.....
Elko (near)	61	18	40.0	0.23	2.4
Ely	67	5	41.0	0.43	2.5
Empire Ranch	67	3	40.8	0.31	3.0
Fenelon	.....	.....	.....	0.40	4.0
Golconda *1	78	30	49.2	0.00	
Halleck *1	77	17	38.5	0.40	4.0
Hamilton	60	9	37.5	0.63	.....
Hawthorne	75	20	49.0	0.08	
Hot Springs *1	74	30	47.6	0.00	
Humboldt *1	75	27	50.3	0.18	
Lee	.....	.....	.....	0.48	3.2
Lewers Ranch	73	22	46.0	2.41	11.5
Los Vegas	80	30	54.4	0.15	
Lovelocks *1	79	30	50.4	0.33	
Martins	72	18	46.0	0.50	
Mill City *1	70	36	45.8	.....	.....
Monitor Mill	64	11	39.8	0.43	2.5
Palisade *1	71	28	39.8	0.40	4.0
Palmetto	74	9	43.0	1.15	8.0
Reno State University	74	22	46.5	0.59	1.2
Sodaville	79	17	48.8	0.40	
Tecoma	.....	.....	.....	0.00	
Toano *1	70	20	43.4	T.	T.
Tuscarora	63	15	40.2	0.94	8.8
Tybo	70	18	45.4	0.35	
Verdi *1	80	20	46.9	1.35	10.0
Wadsworth *1	74	18	44.9	0.61	1.5
Wells *1	75	26	42.9	0.37	2.5
New Hampshire.					
Alstead	.....	.....	.....	4.44	24.0
Berlin Mills	50	—28	19.6	6.08	48.5
Bethlehem	49	—13	21.7	3.98	24.0
Brookline *1	56	0	29.0	6.30	13.0
Claremont	58	— 7	26.2	4.54	19.0
Concord	53	— 5	26.8	5.30	14.9
Durham	54	3	28.0	6.06	16.0
Grafton	48	—17	22.0	4.58	23.0
Hanover	53	—11	23.5	3.69	20.5
Keene	54	— 9	26.2	4.28	15.0
Littleton	47	—11	20.8	3.72	23.0
Nashua	55	2	29.7	6.73	13.5
Newton	57	3	29.7	6.79	9.5
North Conway	52	—11	25.2	8.01	39.0
Peterboro	50	— 7	25.8	5.85	14.0
Plymouth	45	—10	22.7	4.75	26.2
Sanbornton	52	— 5	23.4	5.36	24.0
Stratford	55	—18	20.2	2.89	20.5
Warner	.....	.....	.....	5.77	22.0
New Jersey.					
Asbury Park	64	9	37.2	4.12	5.0
Bayonne	58	9	36.4	3.90	6.5
Belvidere	53	— 3	32.8	3.66	9.0
Bergen Point	54	12	35.8	3.04	6.5
Beverly	57	5	36.6	3.43	11.3
Billingsport *1	57	12	36.4	3.57	7.5
Boonton	52	— 6	32.8	3.38	6.3
Bridgeton	67	10	38.4	3.59	0.5
Camden	60	12	37.0	3.44	5.7
Cape May C. H.	67	11	38.4	2.98	2.9
Charlotteburg	52	— 7	31.7	4.55	7.5
Chester	50	— 3	30.2	4.15	9.5
Clayton	66	11	37.2	3.04	6.0
College Farm	60	1	35.6	3.40	11.0
Deckertown	52	— 9	32.2	3.48	9.5
Dover	53	— 4	32.6	3.91	10.0
Egg Harbor City	65	10	36.4	3.32	3.0
Elizabeth	54	6	35.5	3.41	12.0
Englewood	55	2	32.1	3.90	12.3
Flemington	55	— 4	34.7	3.19	10.0
Freehold	59	6	35.3	3.75	10.0
Friesburg	66	8	37.8	2.48	3.0
Hammonton	.....	.....	.....	3.51	.....
Hanover	51	0	33.7	3.06	9.0
Hightstown	57	7	36.0	3.02	6.0
Imlaystown	60	8	37.7	3.53	7.0
Lambertville	58	— 3	36.2	4.02	9.0
Lebanon	.....	.....	.....	2.36	10.0
Moorestown	59	7	36.8	3.56	6.0
Mount Pleasant	.....	.....	.....	3.29	1.8
Newark	53	5	33.4	3.14	7.5
New Brunswick	57	4	37.0	3.75	11.3
Newton	52	— 5	31.6	3.14	12.0
Oceanic	53	7	36.0	3.39	6.0

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
New Jersey—Cont'd.	°	°	°	*Ins.*	*Ins.*
Paterson	58	12	36.3	4.92	10.5
Perth Amboy	60	7	35.5	3.43	10.0
Plainfield	55	2	34.7	4.08	11.5
Rancocas	.....	.....	.....	3.41	7.5
Rivervale	56	— 5	34.4	4.30	13.0
Rocktown	.....	.....	.....	2.97	6.0
Roseland	54	— 3	32.6	3.77	8.8
Salem	63	10	38.6	3.00	3.3
Somerville	55	— 2	35.4	3.02	9.0
South Orange	54	5	33.8	3.50	10.0
Toms River	65	3	35.8	4.36	5.5
Trenton	54	9	37.4	2.99	7.0
Tuckerton	63	10	37.0	3.27	6.0
Vineland	66	10	38.0	2.65	3.2
Woodbine	64	3	38.4	2.67	3.5
New Mexico.					
Albert	80	28	49.5	0.45	2.0
Albuquerque	74	24	49.1	0.13	T.
Alma	83	18	50.5	0.81	
Aztec	78	9	44.4	0.27	T.
Bellranch	.....	.....	.....	0.85	6.0
Bernalillo	81	23	50.6	0.16	
Bluewater	70	12	41.8	0.40	
Carlsbad	87	26	55.6	0.50	
Deming	.....	.....	.....	0.74	T.
East Lasvegas	70	20	43.2	0.59	3.1
Engle	76	20	49.7	1.18	2.0
Espanola	75	16	45.4	0.10	
Folsom	72	15	41.6	0.46	5.1
Fort Bayard	80	27	50.6	1.55	T.
Fort Stanton	75	19	44.8	0.48	.....
Fort Union	80	15	43.0	0.52	4.5
Fort Wingate	78	15	44.2	0.83	
Gage	.....	.....	.....	0.83	
Gallisteo	70	14	45.7	1.17	
Gallinas Spring	78	18	47.6	0.91	7.0
Hillsboro	86	28	52.8	0.48	
Las Vegas Hotsprings	74	21	44.2	0.76	8.5
Lordsburg	.....	.....	.....	1.25	
Los Lunas	78	23	50.6	0.40	T.
Lower Penasco	79	23	50.4	0.35	T.
Lyons Ranch	85	25	54.0	1.33	
Messilla Park	86	20	55.0	1.36	
Raton	78	17	44.0	T.	T.
Roswell	88	19	51.4	0.50	
San Marcial	82	23	54.4	T.	T.
Socorro	77	25	51.5	0.66	
Springer	81	14	42.6	0.46	.....
Whiteoaks	72	24	46.0	0.70	7.0
Winsors Ranch	69	12	35.8	1.19	.....
Woodbury	78	22	47.5	0.34	0.6
New York.					
Adams	.....	.....	.....	5.52	85.0
Addison	48	—10	26.4	2.86	30.0
Akron	.....	.....	.....	3.26	.....
Alfred	47	— 7	23.4	3.79	35.2
Angelica	50	—11	24.7	3.76	26.0
Appleton	49	6	26.2	1.79	18.3
Arcade	48	— 5	23.0	2.77	19.4
Atlanta	48	— 8	22.2	4.04	32.5
Auburn	55	— 4	27 3	5.01	34.0
Avon	43	— 7	21.2	2.72	35.1
Axton	47	—29	19.6	3.02	37.0
Baldwinsville	47	— 8	24.0	5.70	51.0
Bedford [a]	54	2	32.8	4.39	10.8
Bedford [b]	.....	.....	.....	5.03	8.5
Big Sandy [10]	40	— 6	25.2	.....	.....
Bolivar	50	—12	24 4	3.51	30.0
Bouckville	46	—10	21.2	6.73	39.0
Boyds Corners	.....	.....	.....	6.39	.....
Brockport	50	1	25.4	3.96	41.0
Caldwell	51	—17	24.0	5.78	49.6
Canajoharie	50	—17	22.8	5.05	50.5
Canton	48	—26	19.6	4.31	42.0
Carmel	52	2	31.4	5.44	11.0
Carvers Falls	50	—19	21.6	4.36	33.0
Catskill	50	2	30.0	4.32	12.5
Cedarhill	54	— 7	28.8	3.51	19.0
Charlotte [10]	48	10	29.2	.....	.....
Chenango Forks	.....	.....	.....	4.00	20.0
Cherrycreek	.....	.....	.....	5.59	43.0
Cooperstown	50	—11	23.2	2.91	17.5
Cortland	45	— 2	25.4	1.49	16.2
Cutchogue	57	13	34.9	4.74	3.5
Dekalb Junction	.....	.....	.....	3.22	24.7
Easton	.....	.....	.....	4.44	24.0
Elba	49	1	24.4	5.15	32.5
Elmira	50	4	27.5	3.35	12.8
Fleming	46	2	23.8	2.70	25.0
Franklinville	48	—13	23.3	4.23	29.6
Fulton	.....	.....	.....	5.72	42.2
Glens Falls	51	—11	25.6	5.17	33.5
Gloversville	46	—12	21.4	4.87	36.5
Greenwich	48	—11	25.2	3.67	20.0
Haskinville	.....	.....	.....	2.97	28.4
Hemlock	48	— 9	23.8	3.26	33.8

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
New York—Cont'd.	°	°	°	*Ins.*	*Ins.*
Honeymead Brook	51	— 5	28.6	3.91	13.2
Hoosick Falls	.....	.....	.....	2.80	17.0
Humphrey	50	— 4	24.8	4.19	37.7
Indian Lake	50	—23	20.5	6 02	49.9
Ithaca	50	0	24.4	4.01	29.4
Jamestown	49	— 1	26.6	4.82	27.5
Jay	47	—15	20.7	4.79	40.4
Keene Valley	50	—13	21.4	5.42	37.3
King Station	.....	.....	.....	4.40	30.5
Lake Placid	.....	.....	.....	4.60	46.0
Liberty	50	— 1	26.1	5.42	13.5
Littlefalls	44	— 7	21.4	3.04	40.5
Lockport	52	6	27.4	2.35	23.5
Lowville	47	—11	20.0	5.00	45.0
Lyndonville	.....	.....	.....	1.01	.....
Lyons	48°	4°	27.2°	4.65	40.0
Mayle	.....	.....	.....	1.67	18.5
Middletown	48	0	29.6	3.37	15.5
Mohonk Lake	60	2	31.5	5.41	14.0
Mount Morris	51	2	25.1	3.20	32.0
Newark Valley	.....	.....	.....	3.90	14.0
New Lisbon	47	—20	22.0	3.82	25.4
North Germantown	49	0	29.9	4.80	.....
North Hammond	50	— 8	23.7	3.70	58.0
Number Four	41	—17	19.0	6.72	58.6
Nunda	52	— 4	25.2	4.27	34.5
Ogdensburg	50	— 8	21.0	3.00	31.3
Old Chatham	.....	.....	.....	3.49	15.0
Oneonta	.....	.....	.....	2.23	10.0
Oxford	54	—18	25.2	5.31	32.9
Palermo	45	— 7	21.0	6.03	59.6
Penn Yan	49	—10	25.4	4.19	38.6
Perry City	52	—12	21.9	3.64	31.4
Phœnix	.....	.....	.....	5.68	.....
Plattsburg Barracks	44	—11	22.2	4.28	22.0
Port Byron	44	— 8	23.8	4.55	42.0
Port Jervis	54	— 8	30.0	4.00	12.5
Poughkeepsie	54	— 6	30.3	3.32	10.0
Primrose	55	6	33.6	3.90	13.0
Red Hook	.....	.....	.....	4.38	7.5
Richmondville	50	— 8	23.2	4.06	26.0
Ridgeway	49	4	25.2	2.74	25.3
Rome	42	—10	21.3	5.35	.....
Romulus	49	— 4	25.4	3.38	33.5
Rose	.....	.....	.....	3.50	.....
St. Johnsville	49	—16	24.0	4.52	36.2
Salisbury Mills	.....	.....	.....	3.46	.....
Saranac Lake	50	—22	18.0	3.15	31.4
Saratoga Springs	46	—12	25.4	4.67	35.2
Schenectady	56	—13	27.4	4.13	22.0
Schenevus	.....	.....	.....	3.73	12.8
Setauket	52	10	33.0	4.77	5.2
Shortsville	49	— 4	24.2	4.39	41.4
Skaneateles	.....	.....	.....	5.12	.....
South Canisteo	51	—12	24.0	2.62	23.7
Southeast Reservoir	.....	.....	.....	4.52	.....
South Kortright	54	—17	25.4	2.31	.....
Straits Corners	47	—15	25.6	4.08	21.8
Ticonderoga	45	— 9	23.5	4.63	45.0
Volusia	46	— 2	24 2	3.27	21.5
Wappingers Falls	61	0	32.3	4.58	9.0
Warwick	.....	.....	.....	2.89	.....
Watertown	48	—11	21.8	3.82	55.0
Waverly	54	—17	27.5	4.08	15.5
Wedgwood	46	— 5	22.6	3.74	39.5
West Berne	47	—14	25.2	4.60	28.0
West Chazy	45	—10	20.1	.....	.....
Westfield [a]	50	— 1	26.6	1.43	16.8
Westfield [b]	50	0	25.6	3.75	.....
Westfield [c]	51	2	27.0	2.65	.....
Windham	56	—20	25.1	3.95	14.0
North Carolina.					
Abshers	70	5	44.6	4.92	9.0
Asheville	.....	.....	.....	5.53	3.6
Biltmore	74	18	44.9	2.87	5.4
Bryson City	.....	.....	.....	7.33	2.6
Chapelhill	74	22	46.4	4.99	
Cherryville	79	21	50.8	5.65	T.
Currituck	.....	.....	.....	2.64	T.
Edenton	71	25	48 2	3.64	
Fairbluff	.....	.....	.....	3.17	
Fayetteville	75	23	50.6	3.52	
Flatrock	69	18	43.1	5.06	1.0
Goldsboro	72	24	47.5	3.87	
Greensboro	72	21	44.5	5.79	
Henderson	76	22	45.2	5.57	
Hendersonville	76	14	45.1	5.76	0.5
Henrietta	79	22	50.0	5.29	
Highlands	64	12	38 4	7.10	1.0
Horse Cove	67	17	43.6	7.10	T.
Kinston	76	26	49.9	3.82	
Linville	62	10	36.8	7.60	9.0
Littleton	73	22	45.6	4.38	T.
Louisburg	72	22	47.3	4.73	
Lumberton	73	29	49.7	4.79	
Mana	.....	.....	.....	4.06	4.5

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
North Carolina—Cont'd.	°	°	°	*Ins.*	*Ins.*
Marion	74	17	46.8	6.65	2.2
Marshall	70	7	43.2	3.69	8.5
Mocksville	72	19	46.1	6.18	T.
Moncure	71	21	49.3	3.94	
Monroe	71	17	47.9	4.78	
Mount Pleasant	70	21	48.4	3.07	
Murphy	.....	.....	.....	7.07	2.0
Newbern	76	24	50.8	4.04	
Oakridge	71	20	44.7	4.00	2.2
Patterson [11]	66	18	42.3	3.94	5.0
Pittsboro	72	17	47.8	4.56	
Rockingham	74°	23°	49.3°	2.92	
Roxboro	71	20	47.1	4.31	1.0
Salem	70	20	46.2	4.80	T.
Salisbury	71	21	48.4	5.02	
Saxon	71	20	45.7	2.70	5.5
Selma	73	22	48.6	5.50	
Settle	68	16	43.9	3.30	1.0
Sloan	76[d]	25[d]	51.2[d]	2.95	
Soapstone Mount	73	15	45.8	5.09	
Southern Pines [a]	.....	.....	.....	4.38	
Southern Pines [b]	71	22	48.4	3.72	
Southport	71	27	52.3	3.92	
Springhope [11]	69	24	45.6	4.13	
Tarboro	74[f]	22[f]	48.3[f]	2.70	
Waynesville	70	17	43.6	6.00	3.3
Weldon [a]	71	24	44.4	5.31	T.
Weldon [b]	.....	.....	.....	5.25	T.
North Dakota.					
Amenia	53	—15	20.7	0.81	5.5
Ashley	57	—14	21.5	2.00	19.5
Berlin	55	—15	20.0	1.37	13.2
Bottineau	48°	—16°	12.0°	0.85	8.5
Buxton	53	—17	18.5	0.87	8.0
Churchs Ferry	55	—14	17.2	0.85	8.5
Coalharbor	56	—10	20.8	1.20	12.0
Devils Lake	48	—28	17.0	1.30	13.0
Dickinson	71	—16	29.7	0.96	8.1
Donnybrook	.....	.....	.....	0.36	2.9
Dunseith	48	—17	16.0	0.15	1.5
Ellendale	60	—12	25.0	2.65	14.0
Falconer	59	—16	23.4	1.20	12.0
Fargo	55	—15	19.6	1.23	12.3
Forman	54	—14	22.8	2.07	10.5
Fort Berthold	70	—17	26.0	0.90	9.0
Fort Yates	70	—15	24.0	1.40	14.0
Fullerton	56	—13	21.2	2.22	19.3
Gallatin	54	—15	19.0	0.61	6.1
Grafton	55	—14	17.8	0.35	3.2
Hamilton	55	—15	15.8	1.47	8.6
Hannaford	49	—15	18.2	0.80	2.0
Jamestown	58	—11	23.8	0.72	7.2
Larimore	55	—15	16.5	0.42	1.0
McKinney	44	—20	15.8	0.87	8.7
Mayville	58	—12	22.4	0.75	5.5
Medora	77	—17	28.2	1.37	13.7
Melville	48	—13	20.2	0.35	3.5
Milton	45	—15	12.7	0.50	5.0
Minnewaukon	50	—14	18.8	0.43	4.5
Minot	50	—12	20.0	1.30	13.0
Minto	60	—19	19.1	0.68	2.4
Napoleon	55	—14	20.2	1.62	14.0
New England	70	—22	24.2	.....	.....
Oakdale	66	—12	25.3	1.36	13.6
Pembina	53	—14	15.0	0.64	6 5
Portal	46	—17	17.7	0.80	8.0
Power	54	—19	20 4	0.61	4.4
St. John	51	—14	16.7	0.40	4.0
Sheyenne	46	—13	18.4	0.27	2.7
Steele	45	—14	21.8	1.00	4.0
Towner	44	—24	15.3	1.53	15.3
University	60	—12	20.4	0.35	3.5
Wahpeton	61	—17	25.6	1.05	10.5
Willow City	50	—15	18 0	0.60	6.0
Woodbridge	49	—19	15.2	0.21	2.1
Ohio.					
Akron	56	— 2	30.0	1.66	2.3
Annapolis	58	— 5	32.4	3.65	T.
Ashland	56	— 6	30.0	3.39	10.0
Ashtabula	58	— 3	28.0	1.93	13.6
Atwater	.....	.....	.....	3.98	1.5
Bangorville	56	— 7	31.6	2.79	8.2
Bellefontaine	56	— 2	31.1	2.12	.....
Bement	.....	.....	.....	2.26	0.8
Benton Ridge	55	— 3	30.0	2.81	9.5
Bethany	62	0	36.2	2.26	.....
Bigprairie	57	— 3	32.8	2.18	6.0
Binola	.....	.....	.....	2.30	7.0
Bladensburg	60	— 3	34.2	4.05	8.0
Bloomingburg	61	— 1	35.8	2.14	2.0
Bowling Green	60	— 2	29.0	1.33	3.5
Bucyrus	.....	.....	.....	2.00	4.0
Cambridge	59	— 3	34.3	2.85	8.0
Camp Dennison	62	5	38.0	2.13	0.6
Canal Dover	57	— 3	32.6	3.59	6.5
Canton	56	— 2	31.4	3.09	4.0

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Ohio—Cont'd.	°	°	°	*Ins.*	*Ins.*
Cardington	58	— 3	32.8	1.88	7.2
Cedarville	.....	.....	.....	2.54	0.7
Celina	57°	— 2°	31.6°	2.21	4.0
Circleville	62	1	37.0	1.24	1.5
Clarksville	61	1	36.5	2.78	2.3
Cleveland *a*	54	— 2	29.7	2.17	4.6
Cleveland *b*	54	— 3	28.3	1.27	1.1
Coalton	66	— 1	38.9	2.18	4.0
Colebrook	52	— 7	27.6	1.63	1.0
Dayton *a*	.....	.....	.....	2.87	0.2
Dayton *b*	64	0	35.6	1.97	2.0
Defiance	55	— 3	28.1	1.81	3.6
Delaware	58	— 2	33.4	2.44	9.0
Demos	56	— 1	32.6	1.85	11.0
Dupont	54	— 3	29.6	2.25	10.5
Elyria	54	— 1	30.4	2.61	0.2
Findlay	58	— 3	31.8	1.52	2.5
Frankfort	65	1	37.0	2.04	2.0
Garrettsville	56	— 3	30.6	3.42	8.5
Granville	60	5	35.4	2.89	4.0
Gratiot	58	— 2	34.2	3.41	9.0
Greenfield	62	4	38.2	2.45	3.5
Greenhill	55	— 4	30.6	2.29	4.0
Greenspring [e]	52	— 2	29.4	1.64	2.4
Greenville	56	0	33.0	2.37	1.0
Hanging Rock	70	4	41.2	2.70	.....
Hedges	60	— 4	29.6	1.14	3.5
Hillhouse	52	— 9	26.4	2.44	11.0
Hillsboro	61	— 2	35.6	2.05	2.2
Hiram	53	— 6	28.0	3.45	7.0
Hudson	53	— 8	28.0	0.92	2.0
Jacksonboro	63	0	35.4	1.95	T.
Kenton	63	— 2	34.0	2.31	9.3
Killbuck	57	6	32.8	2.97	6.5
Lancaster	61	0	35.8	2.61	3.0
Lordstown	55	— 6	27.8	2.01	2.6
Lowell	64	1	36.2	2.74	4.0
McArthur	64	— 1	36.6	2.12	4.0
McConnelsville	64	— 3	35.4	2.01	4.2
Mansfield	.....	.....	.....	4.30	6.8
Marietta	63	5	39.2	2.34	6.5
Marion	58	— 2	32.6	2.47	5.8
Medina	56	— 3	30.4	2.28	2.0
Milfordton	55	1	30.8	3.17	11.5
Milligan	68	— 2	35.6	3.10	4.0
Millport	56	— 4	30.6	3.15	1.5
Montpelier	50	— 5	27.3	2.39	4.5
Napoleon	52	— 1	29.9	2.79	7.8
Neapolis	.....	.....	.....	1.21	2.0
New Alexandria	57	— 2	33.6	3.35	7.0
New Berlin	55	— 4	31.4	2.49	1.0
New Holland	63	0	36.0	2.23	2.0
New Paris	54	— 1	34.8	2.86	1.0
New Richmond	64	4	38.5	1.90	1.0
New Waterford	55	— 2	32.2	2.84	7.2
North Lewisburg	59	— 4	31.1	2.25	4.5
North Royalton	54	— 5	29.2	1.75	3.5
Norwalk	54	— 3	30.2	1.77	3.0
Oberlin	55	— 4	30.0	1.77	.....
Ohio State University	59	0	34.8	2.56	2.0
Orangeville	56	— 7	29.2	2.29	3.0
Ottawa	58	— 2	31.9	1.67	5.5
Pataskala	58	— 3	33.7	3.03	5.0
Perry	.....	.....	.....	1.69	4.0
Philo	60	— 4	33.2	2.62	4.7
Plattsburg	58	— 2	33.5	2.00	2.0
Pomeroy	69	3	39.8	2.70	5.5
Portsmouth *a*	.....	.....	.....	2.60	4.2
Portsmouth *b*	69	6	41.9	2.50	4.2
Pulse	.....	.....	.....	1.91	3.3
Richwood	58	— 3	33.0	1.32	8.7
Ridgeville Corners	56	— 4	29.8	1.70	8.5
Ripley	64	2	38.3	1.65	3.4
Rittman	58	— 1	32.6	2.40	0.5
Rockyridge	53	— 3	29.0	3.73	7.0
Rosewood	55	— 1	33.0	2.33	3.0
Shenandoah	56	— 5	29.6	1.88	2.1
Sidney	59	— 1	32.1	2.99	3.8
Sinking Spring	63	0	37.6	2.05	3.7
Somerset	.....	.....	.....	2.68	3.1
Springboro	.....	.....	.....	2.27	.....
Strongsville	.....	.....	.....	2.46	6.5
Thurman	68	0	39.6	1.37	3.0
Tiffin	54	— 1	30.4	2.14	10.9
Upper Sandusky	58	— 3	32.6	3.25	10.0
Urbana	55	0	33.6	2.01	2.2
Vanceburg	66	4	39.0	2.10	2.0
Vermillion	54	— 4	28.8	1.61	4.0
Vickery	54	— 2	29.4	1.68	2.8
Walnut	.....	.....	.....	2.40	1.7
Warren	67	— 2	30.8	2.22	6.9
Warsaw	58	— 1	33.2	2.77	11.1
Wauseon	51	— 4	28.4	2.17	10.2
Waverly	68	2	38.6	2.00	3.5
Waynesville	62	0	35.8	2.21	1.5
Wellington	56	— 2	30.3	2.23	1.8
Westerville	57	1	34.2	2.44	7.8
Willoughby	.....	.....	.....	3.95	1.0
Wooster	57	— 4	31.7	2.25	4.0
Youngstown	.....	.....	.....	2.63	1.5
Zanesville	.....	.....	.....	2.73	5.5
Oklahoma.					
Arapaho	90	20	50.6	0.35	
Beaver	87	22	46.2	1.38	10.1
Burnett	95	16	51.0	0.50	T.
Clifton	92	18	47.4	0.27	
Edmond	86	18	48.6	0.08	
Fort Reno	92	20	50.7	0.47	T.
Fort Sill	90	20	52.5	1.00	
Guthrie	89	19	49.9	0.49	
Hennessey	92	20	48.2	0.60	T.
Jefferson	89	12	47.6	0.35	
Jenkins	91	12	47.6	0.62	1.0
Kingfisher	92	20	49.8	0.67	T.
Mangum	92	18	51.3	0.25	T.
Newkirk	85	13	45.9	0.15	
Norman	90	19	50.3	0.93	T.
Osage	87	15	47.8	1.37	
Perry	92	14	48.8	0.18	T.
Prudence	94°	18°	48.8°	0.15	0.5
Sac and Fox Agency	93	15	48.0	0.41	
Stillwater	90	16	49.8	0.51	T.
Waukomis	91	15	48.6	0.20	
Woodward	90	22	47.7	.....	
Oregon.					
Albany *a* [1]	74	37	52.3	3.01	
Albany *b*	.....	.....	.....	4.71	
Alpha	83	32	51.0	8.78	
Arlington	74	30	54.2	0.47	
Ashland *b*	79	29	50.6	1.37	
Aurora (near)	78	31	50.8	5.66	
Bandon	64	34	50.6	5.87	
Bay City	75	32	49.6	10.56	
Blalock	75	34	52.4	0.56	
Brownsville [1]	78	40	53.5	3.34	
Bullrun	67	34	47.5	9.11	
Burns	70	18	42.6	0.54	3.0
Burns (near) [h]	75	20	47.1	0.24	0.5
Cascade Locks	70	36	51.2	7.15	
Comstock [1]	77	34	51.3	5.13	
Coquille	.....	.....	.....	5.53	
Corvallis	78	32	51.0	4.66	
Dayville	81	25	49.4	1.18	0.1
Ella	.....	.....	.....	0.64	
Eugene	75	34	50.3	5.44	
Fairview	66	39	50.4	6.10	
Falls City	74	30	49.3	9.25	
Forestgrove	79	29	49.9	5.40	
Gardiner	79	37	52.0	8.80	
Glenora	79	31	49.2	11.98	
Government Camp	66	21	41.5	7.78	30.0
Grants Pass	80	31	51.6	2.74	
Happy Valley	72	18	42.9	0.54	1.5
Hare	81	30°	49.4	9.06	
Heppner	71	27	48.6	1.34	
Hood River (near) [j]	74	25	51.5	1.43	
Jacksonville	79	31	50.0	1.52	
Joseph	68	20	41.2	0.56	5.0
Junction City [1]	76	36	48.8	5.04	
Kerby	83	29	50.8	5.78	
Klamath Falls	66[k]	24	46.3[f]	0.20	2.0
Lafayette [1]	76	34	49.7	4.63	
Lagrande	73	26	46.4	1.82	
Lakeview	69	11	41.8	1.04	2.5
Lonerock	69	17	41.8	1.59	0.5
McMinnville	76	31	50.8	6.32	
Merlin [1]	99	30	50.6	1.60	
Monmouth *a* [1]	72	32	50.7	4.21	
Monmouth *b*	76	31	49.8	4.93	
Monroe	75	33	51.1	5.94	
Mount Angel	79	34	51.2	5.87	
Nehalem	.....	.....	.....	9.78	
Newberg	78	31	51.8	5.92	
Newbridge	70	15	43.3	0.50	
Newport	80	30	49.3	7.74	
Pendleton	76	28	50.8	1.85	
Placer	.....	.....	.....	3.97	
Prineville	72	16	47.2	0.15	.....
Riddles [1]	80	30	49.2	1.30	
Riverside	71	19	45.6	0.50	0.5
Salem	76	30	50.2	4.25	
Sheridan [1]	70	33	48.5	4.71	
Silverlake	78	15	42.6	0.31	T.
Silverton [1]	78	40	51.7	3.97	
Siskiyou [1]	64	32	43.5	.....	.....
Sparta	68	13	41.4	1.55	5.0
Springfield [1]	70	34	49.8	5.54	
Stafford	77	33	50.0	6.85	
The Dalles	72	31	51.1	1.62	
Toledo	80	31	50.8	6.30	
Umatilla	.....	.....	.....	0.59	
Vale	69	20	46.0	0.35	
Oregon—Cont'd.					
Vernonia	95	30	51.2	5.05	
Westfork [1]	68	32	49.6	3.73	T.
Weston	75	30	47.8	3.53	3.0
Williams	80	28	49.4	2.32	
Pennsylvania.					
Altoona	53	— 5	30.6	3.12	.....
Aqueduct	56	8	35.3	3.83	15.2
Athens	54	—12	27.8	3.39	11.9
Beaver Dam	.....	.....	.....	3.05	5.0
Brookville	.....	.....	.....	3.06	10.3
Browers Lock	.....	.....	.....	3.75	.....
Butler	56	— 4	30.4	3.24	9.2
Carlisle	54	— 7	33.2	4.31	19.5
Cassandra	54	— 2	30.8	2.98	18.0
Cedarrun	.....	.....	.....	1.20	8.0
Centerhall	50	— 5	31.0	3.58	13.0
Chambersburg	63	— 8	34.4	3.79	10.8
Coatesville	66	2	36.9	4.24	12.2
Confluence	62	2	32.8	3.97	19.0
Coopersburg	63	2	35.4	3.70	10.1
Davis Island Dam	.....	.....	.....	2.64	3.3
Derry Station	59	1	33.8	3.41	9.5
Driftwood	.....	.....	.....	4.10	.....
Duncannon	.....	.....	.....	4.06	13.5
Dushore	50	—14	27.4	3.19	10.6
Dyberry	51	—23	26.8	2.80	18.5
East Bloomsburg	.....	.....	.....	2.80	1.8
East Mauch Chunk	57	— 8	31.7	5.32	12.1
Easton	53	0	35.2	3.18	9.7
Ellwood Junction	.....	.....	.....	3.20	5.5
Emporium	53	— 8	29.1	4.50	22.0
Ephrata	60	0	35.4	2.56	13.5
Everett	56	— 3	32.8	3.69	23.4
Farrandsville	.....	.....	.....	3.18	10.0
Forks of Neshaminy [1] [g]	54	9	35.8	2.92	7.0
Franklin	56	—11	30.4	2.46	4.0
Freeport	.....	.....	.....	3.78	7.0
Girardville	.....	.....	.....	5.50	22.2
Grampian	52	— 2	27.6	3.64	13.0
Greensboro	55	.....	.....	4.82	18.0
Hamburg	.....	.....	.....	3.95	11.0
Hamlinton	52	— 5	28.0	3.60	20.0
Hawley	54	—22	26.6	2.99	16.0
Hawthorn	57	— 7	30.8	4.76	9.2
Hews Island Dam	.....	.....	.....	2.81	.....
Huntingdon *a*	55	— 7	34.5	3.61	13.0
Huntingdon *b*	.....	.....	.....	2.61	11.9
Irwin	.....	.....	.....	3.63	7.9
Johnstown	63	3	33.8	4.04	14.0
Keating	.....	.....	.....	3.66	12.5
Kennett Square	65	3	36.4	3.89	6.2
Lancaster	63	3	35.2	3.48	13.0
Lawrenceville	52	—15	24 5	.....	.....
Lebanon	55	— 7	34.3	2.94	14.6
Leroy	50	— 7	26.2	5.45	14.6
Lewisburg	53	—17	32.6	5.60	10.0
Lockhaven *a*	58	— 5	34.4	3.89	16.5
Lockhaven *b*	.....	.....	.....	3.42	10.0
Lock No. 4	.....	.....	.....	3.20	8.5
Lycippus	60	0	31.8	2.25	11.8
Mifflin	.....	.....	.....	3.00	10.0
Nisbet	.....	.....	.....	3.25	7.0
Oil City	.....	.....	.....	3.89	9.3
Parker	.....	.....	.....	4.35	7.5
Philadelphia	61	11	38.3	2.96	6.1
Quakertown	56	— 2	33.7	2.88	8.0
Reading [3]	.....	.....	34.8	2.68	.....
Renovo *a*	.....	.....	.....	3.95	14.0
Renovo *b*	53	— 3	32.2	4.80	27.9
Saegerstown	53	—16	29.1	2.81	7.9
St. Marys	50	— 6	26.0	.....	.....
Scranton	55	—14	30.4	2.98	19.0
Selinsgrove	54	—11	32.9	3.69	11.5
Shawmont	.....	.....	.....	2 78	6.0
Sinnamahoning	.....	.....	.....	0.56	1.5
Smethport	51	—10	25.9	3.65	21.0
Somerset	56	— 2	28.4	7.31	23.4
South Eaton	52	—13	29.9	3.75	15.0
State College	51	— 1	30.6	3.81	13.6
Swarthmore	61	10	36.5	3.53	12.0
Towanda	53	—19	29.0	3.48	10.7
Troutrun	.....	.....	.....	4.10	12.5
Uniontown	58	3	34.6	4.54	20.0
Warren	49	— 4	26.3	2.38	12.8
Wellsboro	54	— 2	29.0	2.90	22.5
Westchester	61	6	35.8	4.00	8.2
West Newton	.....	.....	.....	3.83	9.0
Westtown	59°	3°	34.6°	3.09	.....
Wilkesbarre	55	— 2	31.8	2.91	11.0
Williamsport	54	— 4	31.0	3.63	7.0
York	62	— 5	34.5	3.08	15.0
Rhode Island.					
Bristol	53	9	34.0	4.79	5.2
Kingston	58	5	32.4	5.77	5.0
Pawtucket	53	5	30.3	5.56	2.8
Providence *a*	58	9	34.6	5.67	5.0

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Rhode Island—Cont'd.	°	°	°	*Ins.*	*Ins.*
Providence[c]	59	6	32.2	5.66	6.0
South Carolina.					
Allendale				3.65	
Batesburg	72	25	51.0	3.58	
Beaufort	78	34	57.2	4.53	
Blackville	77	26	55.6	3.57	
Calhoun Falls				6.39	
Camden				4.97	
Cheraw[b]				4.67	
Clemson College	75	23	49.1	5.52	
Conway				4.69	
Darlington				3.06	
Edisto				4.16	
Effingham				3.57	
Florence	73	27	51.2	4.77	
Gaffney				6.73	
Georgetown	75	33	53.5	2.65	
Gillisonville	78	28	55.0	5.31	
Greenville	74	23	47.0	7.58	
Greenwood	73	23	49.4	5.75	
Holland	74	24	47.8	7.47	
Kingstree[a]	73	30	51.6	3.34	
Kingstree[b]				3.35	
Liberty	75	28	49.4	5.32	
Little Mountain	76	25	51.5	4.22	
Longshore	74	25	50.4	4.60	
Pinopolis[*1]	74	32	53.4	0.96	
St. George	75	29	52.5	3.46	
St. Matthews	76	28	51.2	3.47	
St. Stephens				2.90	
Santuck	73	22	49.8	6.71	
Shaws Fork	75	28	52.9	2.81	
Smiths Mills				3.30	
Societyhill	72	28	51.0	3.20	
Spartanburg	70	22	47.1	5.34	
Statesburg	76	26	53.6	3.32	
Summerville	77	29	54.0	2.81	
Temperance	75	25	49.6	4.09	
Trenton	74	27	53.2	3.66	
Trial	74	25	50.2	1.64	
Walhalla	75	20	47.8	4.50	
Winnsboro	67	25	48.7	4.44	
Winthrop College	71	25	50.5	5.24	
Yemassee	79	30	54.8	4.10	
Yorkville	74	26	51.3	5.37	
South Dakota.					
Aberdeen	58			2.86	22.1
Academy	74	−13	32.4	1.32	12.1
Alexandria	75	−12	29.9	2.53	15.5
Armour	72	−11	31.4	1.76	9.0
Ashcroft	76	−16	32.3	0.71	6.2
Bowdle	68	−15	22.6	3.25	23.5
Brookings	68	−14	26.0	2.09	20.9
Canton	67	−10	29.0	1.53	
Centerville				2.03	8.6
Chamberlain	77	− 9	33.3	1.29	8.5
Clark	64	−15	26.2	2.24	17.4
Desmet	69	−15	27.4	4.49	32.0
Doland	69	−12	27.2	1.80	17.1
Farmingdale				0.29	1.5
Faulkton	68	−13	25.8	2.41	25.0
Flandreau	70	−13	28.4	2.43	20.6
Forestburg	73	−15	27.6	1.50	15.0
Forest City	71	−10	29.1	0.90	9.0
Fort Meade	76	− 8	32.2	1.14	6.5
Gary	65	−13	26.4	2.29	29.0
Grand River School	74	−13	27.6	2.20	19.0
Greenwood	75	− 8	35.0	1.15	5.5
Hartman	71	−15	27.4	2.08	12.0
Highmore	71	−15	27.3	1.75	16.0
Hitchcock				1.95	
Hotch City	76	−14	30.9	0.46	6.5
Hot Springs	75	− 2	38.6	0.20	2.0
Interior	78	−12	32.8	0.20	2.0
Ipswich	63	−11	24.6	2.30	16.0
Kimball	76	−12	32.0	1.40	9.0
Leola	80	−12	21.2	2.16	18.3
Leslie	78	−13	27.8	0.27	
Mellette	65	−13	25.4	3.01	27.0
Menno	76	−12	30.6	1.74	7.8
Millbank		−12		2.50	15.0
Mitchell	76	−11	33.4	2.05	10.2
Oelrichs	74	− 4	34.3	0.45	2.5
Parker	72	−10	30.7	1.66	12.0
Plankinton	74	−14	30.2	2.17	15.0
Redfield	70	−14	27.6	1.85	21.0
Rosebud	62	− 8	25.7	0.60	6.0
St. Lawrence	77	−17	30.1	1.30	13.0
Shiloh	76	− 6	29.5	0.41	4.1
Silver City				0.20	1.8
Sioux Falls	72	− 9	28.8	1.50	9.5
Sisseton Agency	58			2.60	20.0
Spearfish	71	− 3	32.4	0.86	5.5
Tyndall	73	−12	31.7	1.75	6.5
Watertown	63	−14	26.2	1.45	14.5
Waubay	56	−16	22.6	2.10	21.0
South Dakota—Cont'd.	°	°	°	*Ins.*	*Ins.*
Wentworth	60	−15	26.2	1.81	12.7
Wessington Springs	75	−19	27.0	1.33	13.3
Wolsey				2.01	14.8
Tennessee.					
Andersonville	74	16	44.6	4.05	10.0
Ashwood	76	16	48.4	3.04	4.0
Benton	75	23	48.4	5.96	7.0
Bluff City				4.94	13.0
Bolivar	77	21	48.9	2.42	0.4
Bristol	70	2	41.5	5.04	10.0
Byrdstown	72	11	44.8	3.90	7.0
Carthage	73	15	46.8	3.03	5.0
Charleston				6.21	4.0
Clarksville	78	14	46.0	2.29	5.5
Clinton				5.23	8.0
Decatur	76	19	47.6	3.54	5.5
Elizabethton	73	6	44.6	3.98	10.0
Elk Valley		10		2.81	6.0
Erasmus	73	9	43.4	4.53	6.6
Florence	71	17	46.6	3.44	6.0
Franklin	79	16	47.6	2.75	4.8
Grace[*1]	72	16	44.4	4.45	5.5
Greeneville	73	9	43.5	4.85	15.1
Harriman	75	19	46.0	3.81	6.0
Hohenwald	75	14	46.6	5.35	4.0
Iron City	80	12	48.4	5.75	6.0
Jackson	76	20	48.6	2.05	T.
Johnsonville	80	12	47.2	2.12	T.
Jonesboro[*1]	68	13	42.3	2.79	24.0
Kingston				4.19	7.0
Lafayette[*5]	70	12	42.8	4.09	6.5
Lewisburg	76	12	47.7	3.56	7.3
Lynnville	76	14	49.1	2.72	3.0
McKenzie	77	11	46.9	1.93	T
McMinnville	72	17	47.8	3.28	7.5
Madison	81	11	45.9	2.29	5.0
Maryville[*5]	76	23	47.0	4.57	10.5
Newport	74	16	45.7	4.49	8.0
Nunnelly	78	12	47.5	3.86	1.0
Oakhill	74	13	46.2	6.82	9.0
Palmetto	76	15	48.0	3.38	7.2
Pope	80	13	47.0	4.33	6.5
Rogersville	71	8	43.1	4.60	13.0
Rugby	70	10	42.5	4 63	9.5
Savannah	77	20	49.3	3.05	T.
Sewanee	73	13	41.5	4.34	7.5
Silverlake	67	10	39.4	5.50	17.0
Springdale	75	13	44.2	3.41	11.0
Springfield	77	14	45.2	3.25	3.0
Tazewell				5.83	16.0
Tellico Plains	77	19	48.7	4.79	5.0
Tracy City	72	15	43.0	5.04	7.8
Trenton	71	24	47.8	1.83	T.
Tullahoma	75	13	45.9	3.50	8.0
Union City	72	15	46.6	1.84	0.4
Wildersville	76	19	49.2	3.16	0.4
Yukon	75	16	48.4	4.01	6.5
Texas.					
Alpine	86	29	57.2	1.11	
Alvin				9.57	
Anna	88	15	58.7	1.33	1.0
Anson				1.00	2.0
Arthur				1.84	
Austin[a]	82	25	57.6	7.20	
Austin[b*5]	84	25	56.4		
Ballinger	86	26	55.1	1.84	2.0
Beeville	85	24	61.3	4.36	
Big Springs				0.99	2.1
Blanco	84	32	55.6	3.70	
Boerne[*1]	80	33	58.2	3.36	
Bowie	89	22	55.4	1.16	T.
Brazoria	84	37	62.9	8.24	
Brenham	83	32	60.7	5.24	
Brighton	88	42	65.2	1.82	
Brownwood	86	26	57.0	2.44	1.5
Burnet[*1]	78	26	56.8	4.48	T.
Camp Eagle Pass	86	40	60.8	4.00	
Coleman	85	27	56.8	1.39	
College Station	81	31	58.6	3.47	
Columbia	84	30	61.9	9.96	
Conroe[4]	79	30	60.6	7.34	
Corsicana	83	28	57.8	5.44	1.0
Cuero	85	32	63.2	10.43	
Dallas	88	23	54.6	1.57	T.
Danevang	83	31	63.6	7.76	
Dublin	83	26	54.8	1.58	2.2
Duval	85	32	59.0	4.16	
Emory	88	30	57.6	3.94	
Estelle	90	30	57.0	1.57	1.0
Fort Brown	86	40	68.8	2.05	
Fort Clark	83	40	60.8	4.21	
Fort McIntosh	88	43	66.4	2.85	
Fort Ringgold	90	34	69.2	2.65	
Fort Stockton				0.78	
Fredericksburg[*1]	82[a]	24[b]	56.7[c]	4.29	
Gainesville	89	24	54.0	1.50	T.
Texas—Cont'd	°	°	°	*Ins.*	*Ins.*
Georgetown[*1]	88[d]	24	57.9[d]	5.87	T.
Grapevine	91	22	56.3	1.47	
Greenville	88	30	55.8	2.28	
Hale Center	83	28	52.6	0.80	1.5
Hallettsville	83	30	63.2	4.61	
Henrietta	87	23	54.4	1.65	
Hewitt				5.20	
Hondo	83[a]			5.43	
Houston	85	30	61.6	4.22	
Hulen	86[a]	30	60.8[d]	6.00	
Huntsville	82	28	59.4	9.15	
Jacksonville	87	26	57.8	7.49	3.5
Jasper	86	31	61.4	7.54	
Junction				1.55	
Kaufman	85	25	58.0		
Kent				0.48	1.0
Kerrville	83	19[1]	54.0[f]	3.73	
Lampasas	86	21	58.0	4.81	T.
Langtry	80			1.57	
Lapara				3.02	
Laureles Ranch				1.84	
Llano[*5]	82	28	58.6	3.50	
Longview	88	27	56.6	7.37	
Luling	83	27	61.4	3.68	
Mann[4]	87	30	59.0	6.37	1.0
Menardville	84	28	55.9	4.14	0.5
Mount Blanco	85	23	51.0	0.18	1.0
New Braunfels	83	28	61.2	4.45	
Panter				1.75	2.0
Point Isabel[*1]	80	46	69.1	1.60	
Rhineland	88	28	53.8	1.42	T.
Rockisland	83	34	63.2	6.86	
Rockport[*1]	74	50	63.2		
Runge	81	29	59.4	3.70	
Sabine	78	32	61.2	4.24	
Saginaw[*1]	88	26	56.2	1.60	
San Antonio	84	33	63.2	4.56	
Sanderson	80	37	62.4	0.60	
San Marcos	84	25	60.9	4.54	
Santa Gertrudes Ranch				2.26	
Sugarland	84	30	62.4	4.90	
Sulphur Springs	88	22	56.4	2.54	
Temple[a]	84	31	57.6	6.76	
Temple[b]	84	31	57.1	6.86	T.
Turnersville	85	30	57.7	4.65	3.5
Valentine	84	26	51.8	0.05	
Victoria				5.05	
Waco	80	28	57.0	5.00	T.
Waxahachie	89	31	56.2	3.45	
Weatherford	86	22	55.8	1.97	2.0
Wichita Falls				1.44	
Utah.					
Alpine				T.	T.
Castledale	75	11	44.1	0.00	
Cisco	78	16	45.0	T.	T.
Corinne	76	19	47.9	T.	T.
Deseret	80	15	44.0	T.	T.
Elgin	76	17	47.3	T.	
Farmington				0.44	4.1
Fillmore	79	16	47.2	0.15	
Fish Springs	78	24	48.0	0.05	0.5
Fort Duchesne	71	17	42.8	0.00	
Frisco	71	22	46.7	0.03	
Giles	78	15	47.4	T.	
Grover	65	14	42.3	0.32	3.0
Heber	70	16	41.8	0.34	
Henefer	65	14	38.1	0.35	1.5
Hite	74	30	53.1	T.	
Huntsville				0.72	2.0
Kanab				0.00	
Kelton[*1]	70	25	44.8	T.	T.
Levan	71	11	43.5	0.12	T.
Loa	68	10	37.5	0.30	2.0
Logan	71	24	45.0	0.58	
Manti	77	16	44.8	0.10	1.0
Marysvale	62	22	32.6	1.20	12.0
Meadowville				0.13	0.8
Millville				0.64	
Minersville	74	22	45.9	0.34	
Moab	81	22	51.1	0.04	
Mount Pleasant	75	16	44.6	0.10	1.0
Ogden[a*1]	74	28	44.0	0.10	1.0
Pahreah	75	23	49.3	0.12	1.2
Park City	60	13	37.6	0.38	3.8
Parowan	74	18	45.0	0.18	1.5
Pinto	72	6	41.0	0.34	4.0
Promontory[*1]	78	16	40.6	T.	
Provo	79	18	47.8	0.05	
Richfield	76	19	45.2	0.00	
St. George	86	21	53.1	0.27	
Scipio	73	7	41.4	0.10	1.0
Snowville	68	17	43.0	0.07	
Soldier Summit	66	6	34.4	0.30	3.0
Terrace[*1]	70	24	41.4	0.00	
Thistle	78			0.00	
Tooele	73	23	46.4	0.29	3.0

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Utah—Cont'd.	°	°	°	*Ins.*	*Ins.*
Tropic	69	11	40.4	0.22	3.0
Vernal	68	22	42.2	0.15	
Wellington	76	9	41.9	0.30	
Woodruff	60	14	35.0	T.	T.
Vermont.					
Bennington	58	−11	27.9	2.68	8.0
Brattleboro	54	0	28.9	6.05	30.8
Burlington	43	− 9	23.2	3.19	31.5
Chelsea	48	−11	20.2	3.73	31.0
Derby	44	−26	18.0	4.05	40.0
Enosburg Falls	49	−24	22.7	3.93	38.6
Hartland	51	−11	22.7	5.29	32.2
Jacksonville	43	−15	21.8	3.59	26.0
Manchester	42	− 2	23.4	2.87	17.8
Norwich	51	−12	22.2	4.58	32.0
St. Johnsbury	45	−17	20.8	3.86	33.8
Vernon				5.49	19.0
Wells	46	− 8	22.2	3.70	23.0
Woodstock	44	−16	21.5	4.98	40.0
Virginia.					
Alexandria	68	12	39.9	3.14	8.5
Ashland	70	17	42.4	2.62	4.5
Barboursville	67[c]	9[c]	39.4[c]	3.60	11.2
Bedford	65	14	40.1	1.56	10.0
Bigstone Gap	72	11	43.4	4.94	11.0
Birdsnest[•1]	64	23	42.0	2.65	1.0
Blacksburg	69	− 2	38.6	4.57	21.0
Bon Air	70	18	43.2	2.58	3.0
Buckingham	73	11	43.2	3.45	2.5
Burkes Garden	63	9	37.2	5.78	19.0
Callaville	69	19	44.8	3.63	
Charlottesville	69	12	42.2	4.48	14.2
Christiansburg				5.37	26.0
Clarksville				1.55	T.
Cliftonforge	65	10	39.8	2.67	10.8
Columbia	70	12	43.5	2.80	3.0
Dale Enterprise	67	0	37.3	3.38	16.5
Danville				3.15	3.0
Doswell	72	19	45.2	1.50	7.0
Farmville	75	20	45.2	2.87	2.0
Fontella	70	14	45.0	2.88	7.0
Fredericksburg	68	16	41.0	3.00	9.0
Freeling				5.07	11.0
Grahams Forge	71°	2°	40.5°	4.83	18.2
Hampton	66	25	46.2	5.58	0.5
Hot Springs	67	3	38.0	2.84	15.4
Lexington	65	6	40.8	4.03	19.0
Marion	70[d]	4[d]	43.1[d]	5.99	15.0
Meadowdale	62	5	35.0	3.92	22.2
Newport News	69	20	43.2		
Petersburg	72	20	45.5	2.74	2.5
Quantico	60	17	39.8		
Radford				3.83	11.0
Rockymount	70	15	43.3	4.90	5.0
Salem	71	15	43.6	4.80	13.5
Scottsburg	70	21	46.0	2.44	4.0
Speers Ferry				7.14	12.0
Spottsville	72	19	43.7	5.02	0.4
Staunton	66	8	41.5	3.45	16.0
Stephens City	67	1	37.8	3.52	18.0
Sunbeam	71	21	46.5	6.11	T.
Tobaccoville		14		2.67	5.5
Warrenton	68	13	40.8	1.85	13.0
Warsaw	70	14	41.0	2.87	
Westpoint	69	9	43.5	4.60	1.0
Woodstock	67	− 2	39.0	4.23	24.0
Washington.					
Aberdeen	75	30	48.0	9.83	
Anacortes				2.37	
Ashford				7.33	T.
Bremerton	76	31	49.6	10.23	
Bridgeport	75	24	49.6	0.52	T.
Brinnon	67	32	47.8	14.60	
Cedar Lake				8.78	
Cedonia	62	21	40.4	1.78	
Centerville	72	28	46.8	1.61	
Chehalis	74	33	47.6	8.29	
Cheney				0.17	
Clearwater	71	30	47.5	14.44	
Cle Elum	67	21	43.2	2.25	1.0
Colfax	78	30	47.2	3.03	T.
Colville	72	23	43.4	1.91	2.0
Conconully	64	18	41.8	1.42	1.0
Connell				0.25	
Coulee City	69	25	45.6	0.62	T.
Coupeville	67	32	47.2	1.54	
Crescent	69	21	43.2	1.94	2.0
Dayton	71	31	47.6	1.76	
Ellensburg	71	22	45.6	0.91	
Ellensburg (near)	76	24	45.2	0.75	1.0
Grandmound	73	29	48.6	5.48	
Granite Falls				5.44	
Hooper	75	31	48.5	0.88	
Kennewick	78	28	51.0	0.30	
Lacenter	75	31	50.1	5.04	
Lakeside	62	29	45.0	1.02	

Stations	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Washington—Cont'd.	°	°	°	*Ins.*	*Ins.*
Lind	72	28	46.2	0.90	T.
Loomis	67	25	46.2	T.	
Mayfield	75			6.79	
Montecristo	64	27	41.3	13.24	13.0
Mottinger Ranch	73	35	52.4	0.55	
Mount Pleasant	69	35	51.0	6.14	
Moxee Valley	76	23	48.2	0.80	
New Whatcom	64	30	47.3	3.39	
Northport	61	16	39.0	1.60	4.0
Olga	65	32	45.7	2.95	
Olympia	75	31	49.4	6.89	
Pinehill	78	29	49.8	2.50	
Pomeroy	69	35	50.4	2.03	T.
Port Townsend	65	34	48.2	1.08	
Pullman	68	29	44.8	2.27	2.0
Renton				2.86	
Republic	70	20	42.4	1.88	2.5
Ritzville				0.46	T.
Rosalia	68	25	43.9	2.84	1.0
Shoalwater Bay[•10]	70	39	49.8		
Snohomish	77	30	48.8	4.86	
Southbend	83	31	51.1	10.17	
Sprague				0.12	
Stampede	70	28	46.2	1.80	18.0
Sunnyside	71	27	48.4	0.47	
Twin [4]	74	30	47.4	5.88	
Union	63	30	47.6	15.59	
Vancouver	77	31	51.2	4.55	
Vashon	70	33	48.4	6.39	
Waterville	64	19	40.9	1.54	
Wenatchee (near)	67	27	45.4	1.02	4.0
Westsound	68			3.86	
Wilbur	67	23	43.1	0.99	T.
West Virginia.					
Beckley	65	7	37.6		12.0
Beverly	67	4	37.2	5.09	26.0
Bluefield	68	8	39.4	6.48	18.5
Buckhannon[5]	64	3	37.4	3.75	15.0
Burlington	65	− 5	37.0	3.31	19.0
Central	65	− 1	37.2	3.37	11.8
Charleston				2.60	13.0
Dayton	61	1	37.3	3.67	10.0
Eastbank	65	12	44.2	2.66	13.0
Elkhorn	69	10	40.9	5.38	15.8
Fairmont				4.14	9.5
Glenville	65	3	38.3	3.68	14.6
Grafton	65	1	36.4	3.77	12.5
Green Sulphur Springs	65	10	40.9		
Harpers Ferry				3.56	16.0
Hinton *a*				4.86	18.2
Hinton *b*	71	8	41.8		23.0
Huntington	70	5	40.7	2.35	10.0
Madison	78	11	44.2	5.88	15.2
Marlinton	65	− 2	36.0	4.92	21.0
Martinsburg	66	2	35.6	2.95	18.5
Morgantown	67	3	37.8	3.59	10.8
New Martinsville	63	14	39.0	3.36	5.0
Nuttallburg	68	6	40.0	5.25	24.0
Oceana	70	7	40.8	4.57	
Oldfields	64	2	37.8	1.91	13.0
Parsons	72	3	34.2	3.00	14.0
Philippi *a*	67	3	39.4	4.56	21.0
Point Pleasant				2.37	4.0
Romney	61	3	37.4	3.66	13.5
Rowlesburg				4.57	20.0
Spencer	69	4	41.3	3.17	15.0
Terra Alta	60	− 4	32.8	3.79	18.5
Uppertract	67	6	38.8	3.46	14.0
Wellsburg	56	0	32.4	3.04	10.0
Weston *a*				4.24	17.0
Weston *b*	66	4	40.0		18.5
Wheeling *a*				3.37	13.0
Wheeling *b*	62	6	39.3	2.71	13.0
Wisconsin.					
Amherst	48	− 8	24.0	1.50	11.0
Antigo	50[f]	−13[f]	21.0[f]	1.40	14.0
Ashland				0.48	4.8
Barron	54	−18	24.8	1.19	11.9
Bayfield	54	−12	21.6	0.50	5.0
Brodhead	59	− 2	27.6	2.30	13.0
Butternut	57	−24	19.8	1.05	10.5
Citypoint	49	−12	23.6	0.93	11.0
Delavan	59	− 3	27.2	0.74	10.0
Dodgeville	52	1	25.8	1.84	15.0
Easton	50	−10	24.5	1.37	16.5
Eau Claire	51	−10	23.4	1.23	12.7
Florence	50	−14	18.8	1.50	15.0
Fond du Lac	49	− 5	26.2	0.94	13.6
Grand River Locks				0.72	3.4
Grantsburg	52	− 7	24.2	0.67	6.8
Hartford	52	− 5	26.6	1.64	15.8
Hartland	49	− 3	26.6	1.63	16.0
Harvey	50	− 4	27.5	2.19	12.4
Hayward	52	−21	22.2	1.66	16.8
Heafford	45	−23	18.2	1.15	11.5
Hillsboro	52	−12	25.6	2.00	20.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Wisconsin—Cont'd.	°	°	°	*Ins.*	*Ins.*
Knapp	47	−16	22.4	1.10	11.1
Koepenick[•1]	52	−16	21.6	1.60	16.0
Lancaster	54	− 6	25.1	1.98	18.0
Madison	50	− 6	25.1	1.32	12.5
Manitowoc	49	− 4	25.6	0.98	11.0
Meadow Valley	50	−13	23.0	0.58	11.0
Medford	49	−22	19.6	0.90	9.0
Menasha				0.79	11.0
Neillsville	56	−16	22.8	1.95	14.0
New Holstein	43	− 7	23.8	0.95	9.5
New London	51	− 9	24.2	1.73	12.0
North Crandon	50			1.20	12.0
Oconto	57	− 6	25.0	1.70	17.0
Osceola	51	−12	23.0	0.70	11.5
Oshkosh	49	− 5	25.9	1.05	
Pepin	50	−12	24.6	1.86	20.0
Pine River	53	−11	24.4	1.14	15.3
Portage	48	− 7	25.6	1.13	15.0
Port Washington	55	− 7	25.6	1.40	14.0
Prairie du Chien	53	− 5	29.2	2.05	12.8
Prentice	44	−20	20.3	0.79	7.9
Racine	57	0	29.1	1.20	
Sharon	55	− 5	25.6	1.48	5.2
Shawano	53	− 8	23.0	0.60	6.0
Sheboygan	50	− 2	25.6	1.57	15.8
Spooner	62	−18	23.6	2.80	28.0
Stevens Point	49	− 9	24.2	0.94	10.0
Sturgeon Bay Canal[•9]	48	− 8	23.8		
Valley Junction	50	−12	24.4	0.90	10.7
Viroqua	50	− 9	25.6	1.70	17.0
Watertown	50	− 5	25.5	1.79	18.0
Waukesha	49	− 4	25.3	0.91	10.5
Waupaca	49	− 8	24.4	0.69	16.0
Wausau	47	− 8	22.6	1.40	14.0
Westbend	53	− 4	29.2		
Westfield	50	− 8	25.6	1.50	15.0
Whitehall	49	−11	24.2	1.05	11.8
Wyoming.					
Alcova	72	8	38.4	T.	T.
Basin	68	8	30.2	T.	T.
Bedford	57	10	33.4	0.51	5.1
Bigpiney	55	10	31.8	T.	T.
Bitter Creek	80	8	40.3	0.40	4.0
Buffalo	75	− 4	34.4	0.86	8.6
Burlington	80	0	38.2	0.15	
Burns	54	− 1	27.9	T.	
Carbon	63	12	37.6	0.12	
Centennial	57	2	31.8	1.25	12.5
Cody	72	− 2	37.4	T.	T.
Douglas	73	−16	35.4	0.40	4.0
Embar	70	3	32.0	0.00	
Evanston	60	12	33.9	0.11	
Fort Laramie	78	− 4	38.4	0.30	4.5
Fort Washakie	72	5	37.8	0.56	8.1
Fourbear	58°	− 4	34.0°	3.13	25.3
Hyattville	66	2	32.8	0.14	1.8
Iron Mountain	70	− 5	36.1	0.03	
Kimball Ranch	66	8	35.6	0.20[g]	
Laramie	70[k]	− 3[k]	35.6[k]	0.31	0.1
Lovell	63	0	32.2	0.58	5.4
Lusk	70	− 2	36.8	0.17	2.5
Rawlins	66	− 5	32.1	0.00	
Sheridan	61	18	34.6	0.56	2.6
Sherman	73	− 1	35.4	1.11	2.7
Thayne				1.30	13.0
Thermopolis	52	12	32.3	0.16	0.9
Wamsutter	71	4	37.4	14.0	
Cuba.	62	28	43.2	0.30	3.0
Aguacate	90	44	70.4	1.73	
Anstralia	92	48	72.0	T.	
Banaguises	92	49	72.1	1.77	
Batabano	89	52	74.2	1.85	
Camajuani	88	51	71.4	1.57	
Cruces				2.78	
Guabairo				1.56	
Guanajay	84	64	77.5	2.26	
Holguin	92	54	75.4	1.18	
Manzanillo	89	68	79.7	1.31	
Matanzas	89	47	71.7	2.46	
Moron Trocha	91	50	73.4	3.27	
Nuevitas	95	56	76.6	T.	
Pinar del Rio	88	50	72.1	2.60	
Sagua la Grande	92	49	72.3	0.92	
Santa Clara	95	54	76.7	1.95	
Soledad	89	48	69.8	1.40	
Union de Reyes	89	59	75.0	0.33	
Puerto Rico.					
Adjuntas	85	49	67.9	1.62	
Aguadilla	92	69	78.6	0.18	
Arecibo	93	59	72.8	1.55	
Bayamon	96	58	75.0	1.84	
Caguas	86	58	72.3	1.01	
Canovanas	91	66	76.2	1.62	
Carite				4.00	
Cayey	87	55	70.8	1.62	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Puerto Rico—Cont'd.	°	°	°	*Ins.*	*Ins.*
Comerio	93	43	67.5	2.00	
Corozal	94	55	72.6	2.25	
Fajardo	86	65	76.3	2.15	
Hacienda Coloso	91	56	74.2	0.60	
Humacao	89	65	76.6	1.93	
Isabela	83	68	75.4	0.49	
La Isolina	89	60	72.7	2.65	
Lajas	91	55	76.8	1.00	
Luquillo	88	63	74.0	5.36	
Manati	95	58	74.2	1.06	
Maunabo	87	67	77.2	2.47	
Mayaguez	93	64	77.1	1.21	
Morovis	93	59	73.4	3.23	
Port America	89°	55°	75.8°	0.15	
Puerta de Tierra	91	68	77.1	2.29	
San German	84	59	72.6	2.12	
San Lorenzo	92	54	74.1	0.75	
Utuado	93	.....	.....	0.45	
Vieques	86	67	76.4	2.65	
Yanco	98°	52°	75.2°	0.08	
Mexico.					
Ciudad P. Diaz	83	40	63.4	4.61	
Leon de Aldamas	83	41	62.8	0.74	
Puebla	76	50	63.8	0.01	
Topolobampo *1	89	58	68.7	0.53	
New Brunswick.					
St. John	46	— 3	26.6	5.60	13.2
Nicaragua.					
Rivas	93	73	83.2	0.11	

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Alaska.					
Sitka	47	10	33.0	3.49	T.
California.					
Agnew	75	35	54.6	0.58	
Chino	.....	.....	.....	0.00	
Fort Bragg	.....	.....	.....	2.37	
Lakeside	.....	.....	.....	0.15	
Mohave *1	68	28	50.0	0.00	
Placerville	64	26	44.5	2.89	
San Miguel Island	74	38	55.2	0.24	
Visalia *b*	77	.....	.....	0.12	
Florida.					
Fort George *1	74	24	54.6	.....	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Illinois.	°	°	°	*Ins.*	*Ins.*
Aurora *b*	58	— 9	18.1	4.15	20.0
Indiana.					
Madison *b*	.....	.....	.....	2.80	.....
Louisiana.					
Lafayette	76	20	51.6	6.83	
Massachusetts.					
Leicester	86	—11	24.6	8.27	8.0
Longplain	.....	.....	.....	5.49	8.0
Mississippi.					
Holly Springs	68	1	37.0	6.55	1.0
Montana.					
Ridge	48	—25	17.8	0.20	2.0
Oregon.					
Albany *a* *1	62	26	43.2	3.07	0.5
Tillamook	.....	.....	.....	4.84	
Utah.					
Ogden *1	56	14	30.8	1.08	8.0
Virginia.					
Fontella	69	5	36.8	4.43	14.5
Wisconsin.					
Amherst	40	—16	10.1	1.90	9.0
Waupaca	39	—13	12.2	1.36	7.8
Cuba.					
Aguacate	90	44	70.2	4.83	
Banaguises	89	47	71.7	2.80	
Batabano	95	48	72.6	3.55	
Camajuani	87	50	69.0	0.51	
Cardenas	90	55	72.9	4.01	
Cruces	.....	.....	.....	1.62	
Gibara	90	60	72.8	1.64	
Guabairo	.....	.....	.....	1.56	
Guanajay	84	.....	.....	2.77	
Guines	79	54	70.6	5.77	
Holguin	88	56	73.1	1.15	
Manzanillo	89	64	76.6	1.13	
Matanzas	89	50	70.0	3.10	
Moron Trocha	92	52	72.3	0.73	
Nuevitas	91[4]	58	75.1	1.16	
Pinar del Rio	91	50	71.2	4.32	
Sagua la Grande	90	51	71.2	1.30	
Santa Clara	95	39	70.6	0.99	
Soledad	86	49	70.2	1.57	
Union de Reyes	87	54	72.4	3.19	
Nicaragua.					
Rivas	90	73	81.9	0.02	

EXPLANATION OF SIGNS.

* Extremes of temperature from observed readings of dry thermometer.

A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:

[1] Mean of 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. + 4.
[2] Mean of 8 a. m. + 8 p. m. + 2.
[3] Mean of 7 a. m. + 7 p. m. + 2.
[4] Mean of 6 a. m. + 6 p. m. + 2.
[5] Mean of 7 a. m. + 2 p. m. + 2.
[6] Mean of readings at various hours reduced to true daily mean by special tables.
[7] Mean from hourly readings of thermograph.
[9] Mean of sunrise and noon.
[10] Mean of sunrise, noon, sunset, and midnight.

The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers.

An italic letter following the name of a station, as "Livingston *a*," "Livingston *b*," indicates that two or more observers, as the case may be, are reporting from the same station. A small roman letter following the name of a station, or in figure columns, indicates the number of days missing from the record; for instance, "[a]" denotes 14 days missing.

No note is made of breaks in the continuity of temperature records when the same do not exceed two days. All known breaks, of whatever duration, in the precipitation record receive appropriate notice.

CORRECTION.

February, 1900, Oklahoma, Hennessey, make mean temperature 38.8 instead of 40.6. Norman, make mean temperature 38.1 instead of 36.8.

February, 1900, Oregon, Dayville, make total precipitation, 0.99 instead of 1.18.

February, 1900, Virginia, Farmville, make mean temperature 39.2 instead of 38.6.

NOTE.—The following changes have been made in the names of stations: Oklahoma, Hopeton changed to Jenkins. Texas, Fruitland, changed to Bowie.

TABLE III.—*Mean temperature for each hour of seventy-fifth meridian time, March*, 1900.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Mean.
Bismarck, N. Dak.	20.1	19.2	18.5	18.1	17.5	16.7	16.3	16.0	16.1	17.7	20.4	23.0	24.9	26.6	28.2	29.4	30.2	30.3	29.5	27.9	25.6	23.8	22.0	20.7	22.4
Boston, Mass	29.9	29.7	29.4	29.3	28.3	28.5	29.1	30.5	31.8	33.7	35.5	37.2	38.1	39.2	39.9	39.9	38.5	37.0	35.2	33.6	32.7	31.8	31.1	30.6	33.4
Buffalo, N. Y.	23.7	23.7	23.4	22.9	23.1	23.0	22.9	23.4	24.4	25.5	26.5	27.5	28.2	28.3	28.9	28.6	28.5	28.1	27.2	26.1	25.4	25.0	24.6	24.2	25.5
Cedar City, Utah	44.5	43.5	41.8	41.1	40.5	39.6	39.1	38.2	37.7	39.7	44.4	48.6	51.6	54.3	56.2	57.5	57.8	58.3	57.5	56.0	52.7	49.6	48.0	46.2	47.7
Chicago, Ill.	27.5	27.3	27.2	26.9	26.6	26.5	26.0	26.4	26.8	27.9	28.2	29.0	29.7	30.1	30.7	30.7	30.8	30.9	30.6	30.4	29.7	29.3	28.6	28.2	28.6
Cincinnati, Ohio	36.2	35.4	34.4	33.7	33.3	32.8	32.5	33.1	34.0	35.5	37.8	39.4	40.8	41.8	42.7	43.5	43.7	43.0	41.8	40.8	39.6	38.7	37.7	37.0	37.9
Cleveland, Ohio	27.2	26.7	26.6	26.2	25.9	25.8	25.6	26.0	26.4	27.5	28.7	29.9	30.3	30.2	30.8	31.1	31.3	30.7	30.1	29.7	29.1	28.4	27.7	27.6	28.3
Detroit, Mich.	24.1	23.6	23.3	23.1	22.9	22.7	22.6	23.4	24.1	25.0	26.7	28.4	29.6	29.9	30.5	30.7	30.5	29.6	28.6	27.8	26.5	26.0	25.2	24.8	26.2
Dodge, Kans.	38.6	37.9	37.1	36.4	35.6	35.0	34.1	33.1	34.3	38.2	42.0	45.1	47.9	50.4	52.6	53.8	54.9	54.6	53.2	49.7	45.5	43.4	41.3	40.2	43.1
Eastport, Me.	25.0	24.4	23.6	23.2	22.9	22.4	22.8	23.5	25.0	26.5	28.3	29.9	30.7	31.3	31.8	31.8	31.2	30.2	29.0	28.3	27.1	26.5	26.2	25.7	27.0
Galveston, Tex.	59.3	59.2	58.9	58.5	58.1	58.0	57.8	57.7	58.1	58.9	60.0	60.9	61.9	62.8	63.7	63.1	62.6	62.1	61.3	60.4	60.1	60.1	60.2	59.9	60.1
Havre, Mont.	27.4	26.9	25.8	26.2	25.7	26.0	25.3	24.9	24.5	25.7	27.9	29.6	31.9	33.2	34.8	36.9	37.7	37.9	37.3	36.2	33.1	31.2	29.8	28.6	30.2
Independence, Cal.	53.8	52.8	51.9	50.0	48.8	47.7	47.0	46.7	44.7	44.6	47.7	50.7	55.4	59.3	62.6	64.2	65.2	65.6	65.5	64.9	61.4	58.7	56.9	55.3	55.1
Kalispell, Mont	36.8	35.5	34.0	33.2	32.6	31.6	31.4	30.7	29.8	29.7	32.5	36.0	39.3	42.6	44.6	46.4	47.4	47.7	47.4	46.0	44.1	40.9	38.8	37.7	38.2
Kansas City, Mo.	38.9	38.1	36.8	36.0	35.5	34.4	33.6	33.5	33.7	36.0	38.5	40.8	43.0	44.7	46.5	47.8	48.3	47.9	47.0	45.3	43.6	42.5	41.5	40.3	40.6
Key West, Fla.	69.0	68.8	68.9	68.7	68.7	68.5	68.5	69.7	70.8	71.6	71.8	72.3	72.6	72.5	72.7	72.2	71.4	70.6	69.9	69 9	69.6	69.5	69.3	69.0	70.3
Marquette, Mich.	18.2	17.6	17.3	17.2	16.9	16.6	16.4	17.4	18.0	19.1	20.6	22.0	23.0	23.3	23.6	23.7	23.6	23.2	22.5	21.9	21.2	20.5	19.9	19.4	20.1
Memphis, Tenn.	49.1	48.4	47.7	47.1	46.2	45.6	45.0	45.1	46.7	48.2	50.5	52.5	54.4	55.4	56.5	57.2	57.0	56.7	55.6	55.0	53.5	52.7	51.6	50.2	51.2
Mt. Tamalpais, Cal.	51.5	51.5	51.1	50.9	50.7	50.4	49.7	49.6	49.4	49.0	50.4	51.5	51.8	53.4	54.1	55.4	55.7	55.5	54.4	53.2	52.1	51.4	51.2	51.3	51.9
New Orleans, La.	57.8	57.3	56.8	56.4	56.0	55.5	55.2	55.1	55.8	57.6	59.6	61.1	62.5	64.0	65.7	66.5	66.9	66.5	65.2	63.5	62.0	60.9	59.8	59.0	60.3
New York, N. Y.	32.7	32.1	31.8	31.0	30.9	30.8	30.7	31.4	32.6	34.3	35.1	36.6	38.0	38.7	39.7	39.8	39.6	38.8	37.5	37.3	36.0	35.2	34.4	33.7	34.9
Philadelphia, Pa.	34.8	34.2	33.6	33.3	32.6	32.2	32.6	33.5	34.9	36.7	38.3	39.8	41.6	42.4	42.9	43.1	42.4	41.3	39.8	39.2	37.6	37.1	36.2	35.5	37.3
Pittsburg, Pa.	31.9	31.6	31.0	30.9	30.4	30.1	30.0	30.5	31.4	33.2	35.2	36.5	38.1	39.1	40.0	40.4	40.0	39.0	38.0	36.7	35.2	34.1	33.3	32.5	34.5
Portland, Oreg.	50.5	49.7	48.5	48.1	47.5	46.9	46.6	47.0	46.1	45.6	46.3	47.5	49.6	51.6	53.4	55.5	56.5	57.5	58.1	57.6	56.5	54.8	53.5	52.3	51.1
St. Louis, Mo.	40.5	39.8	38.8	37.4	36.6	36.0	35.5	35.5	36.1	37.6	39.8	42.1	44.3	46.0	47.7	48.8	49.1	48.8	47.8	46.3	45.3	44.2	43.0	42.0	43.0
St. Paul, Minn.	24.0	23.3	22.5	21.7	21.1	20.7	20.1	19.9	19.7	20.6	22.6	24.6	26.7	28.0	29.3	30.4	31.2	31.4	30.7	29.8	28.7	27.6	26.8	25.5	25.3
Salt Lake City, Utah	46.1	44.5	43.5	42.6	42.3	42.1	40.8	41.3	39.5	41.0	44.5	49.0	51.7	53.5	55.4	56.8	57.5	57.6	56.4	55.1	52.2	49.8	48.3	47.5	48.3
San Diego, Cal.	58.2	57.7	57.0	56.7	56.2	55.8	55.6	54.7	54.5	54.9	56.7	59.5	61.4	62.4	63.6	63.4	63.3	63.2	62.7	62.0	60.9	60.0	59.5	58.8	59.1
San Francisco, Cal.	52.8	51.8	51.4	50.7	50.6	50.4	50.1	51.2	50.2	49.7	50.5	52.0	53.7	55.5	57.4	58.9	59.9	59.5	57.8	57.0	55.5	54.4	53.8	53.2	53.7
Santa Fe, N. Mex.	40.7	39.7	38.8	38.0	36.9	36.0	34.7	35.1	35.1	39.5	42.5	44.6	46.8	48.8	50.4	51.5	53.0	52.4	51.9	50.4	46.7	44.1	42.5	42.0	43.4
Savannah, Ga.	53.5	53.0	52.5	52.0	51.6	51.1	50.8	51.8	54.3	57.3	59.5	61.5	62.6	63.5	64.2	63.9	62.6	61.0	58.6	57.6	56.1	55.4	54.7	54.0	56.8
Washington, D. C.	35.9	35.2	34.5	33.8	33.6	33.5	33.9	35.3	36.9	38.4	39.7	41.4	42.9	43.9	44.5	45.0	44.7	43.7	42.3	40.6	39.5	38.5	37.6	36.5	38.8
West Indies.																									
Basseterre, St. Kitts.	74.0	73.9	73.9	73.8	73.9	74.7	76.4	77.4	78.6	79.0	80.2	80.2	80.3	79.8	78.6	77.9	76.2	75.5	75.3	75.2	75.0	74.7	74.4	74.1	76.4
Bridgetown, Bar.	74.5	74.3	73.9	74.0	73.8	74.8	78.0	79.9	80.9	81.8	82.8	82.4	82.8	81.8	81.0	79.9	78.2	77.0	76.6	76.2	75.8	75.5	75.3	75.0	77.8
Cienfuegos, Cuba*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Havana, Cuba	69.4	68.8	68.5	68.2	67.9	67.8	67.8	69.5	72.3	74.5	75.8	76.7	76.6	75.9	75.5	75.2	74.5	73.9	72.8	72.1	71.5	70.8	70.3	69.7	71.9
Kingston, Jamaica	70.8	70.3	69.7	69.5	69.4	69.5	69.9	74.8	78.0	80.2	81.6	82.3	82.6	82.8	82.5	81.5	80.7	79.0	76.8	75.5	74.3	73.3	72.3	71.4	75.8
Port of Spain, Trin.	73.8	73.4	73.1	72.9	73.1	73.2	75.9	79.6	81.1	82.5	83.5	84.2	83.9	84.0	83.1	82.2	80.8	78.8	77.9	77.0	76.0	75.7	75.2	74.6	78.2
P. Principe, Cuba	66.3	65.3	64.9	64.5	64.4	64.1	64.5	69.2	72.9	76.0	78.7	81.0	82.4	82.8	82.0	80.8	79.2	76.7	73.7	71.2	70.0	69.0	68.2	67.0	72.3
Roseau, Dominica	68.6	68.3	67.9	67.6	67.4	67.4	68.1	73.9	79.6	80.2	81.5	81.9	82.3	81.5	80.8	79.7	78.2	76.7	75.4	75.1	75.3	74.9	77.3	77.3	77.3
San Juan, P. R.	74.6	74.4	74.2	74.2	73.7	73.9	76.5	78.4	77.6	78.9	79.8	80.7	80.7	80.2	79.1	78.7	77.4	76.4	75.7	75.6	74.6	73.9	73.4	72.7	75.6
Santiago de Cuba	72.4	72.2	71.7	71.4	71.5	71.2	73.1	75.9	77.6	78.9	81.4	83.9	84.4	84.8	84.5	83.9	82.6	80.9	78.7	77.2	76.1	75.0	74.3	73.8	76.5
Santo Domingo, S. D.	70.9	70.4	69.6	69.4	68.9	68.7	71.2	73.4	78.9	81.4	83.9	84.4	84.8	84.5	83.9	82.6	80.9	78.7	77.4	76.1	74.9	73.7	72.5	71.5	70.5	74.4
Willemstad, Curaçao	69.5	68.8	68.4	68.0	67.7	67.4	68.5	72.9	76.3	78.8	80.2	81.0	81.3	80.5	80.4	79.7	78.7	77.4	77.6	77.4	77.3	77.1	77.1	76.8	78.4
	76.3	76.0	75.8	75.8	75.8	75.8	77.2	78.5	79.9	80.7	81.7	81.8	81.9	81.9	81.5	80.6	79.3	78.4							

*Record incomplete.

TABLE IV.—*Mean pressure for each hour of seventy-fifth meridian time, March*, 1900.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Mean.
Bismarck, N. Dak.	28.289	.289	.289	.290	.285	.283	.286	.290	.292	.289	.283	.284	.280	.274	.263	.257	.255	.252	.257	.266	.278	.287	.292	.297	.279
Boston, Mass.	29.826	.817	.808	.806	.811	.816	.826	.831	.831	.825	.813	.797	.782	.774	.770	.769	.775	.785	.797	.809	.815	.816	.815	.814	.805
Buffalo, N. Y.	29.161	.160	.152	.152	.155	.159	.163	.172	.175	.171	.166	.161	.153	.140	.133	.132	.137	.145	.156	.164	.166	.169	.169	.167	.157
Cedar City, Utah	24.240	.244	.245	.245	.239	.236	.240	.245	.253	.267	.275	.278	.273	.260	.245	.225	.211	.204	.199	.200	.207	.218	.230	.237	.238
Chicago, Ill.	29.150	.145	.141	.130	.127	.130	.140	.149	.151	.153	.156	.155	.151	.136	.129	.129	.135	.143	.153	.164	.163	.165	.162	.159	.147
Cincinnati, Ohio	29.372	.371	.364	.362	.367	.374	.385	.392	.396	.396	.390	.385	.370	.359	.346	.345	.346	.354	.368	.375	.388	.393	.395	.395	.374
Cleveland, Ohio	29.198	.194	.191	.191	.192	.195	.199	.204	.202	.204	.202	.196	.189	.179	.172	.166	.171	.181	.191	.198	.204	.205	.208	.205	.196
Detroit, Mich.	29.234	.232	.225	.218	.219	.220	.226	.232	.234	.236	.233	.231	.223	.213	.207	.203	.205	.218	.220	.228	.237	.243	.245	.245	.226
Dodge, Kans.	27.431	.435	.439	.437	.438	.445	.451	.454	.462	.467	.468	.462	.449	.427	.404	.388	.378	.365	.368	.389	.404	.415	.427	.434	.426
Eastport, Me.	29.808	.804	.799	.795	.792	.795	.800	.805	.807	.807	.796	.786	.774	.766	.761	.759	.766	.777	.791	.803	.804	.798	.791	.786	.790
Galveston, Tex.	29.985	.982	.975	.967	.965	.974	.984	.994	.011	.021	.027	.023	.015	.998	.975	.959	.952	.949	.953	.960	.972	.985	.992	.991	.984
Havre, Mont.	27.372	.370	.373	.372	.372	.372	.377	.379	.385	.387	.391	.394	.399	.400	.390	.383	.376	.371	.367	.368	.372	.374	.377	.380	.379
Independence, Cal.	25.944	.950	.955	.958	.959	.956	.958	.959	.972	.981	.994	.998	.999	.989	.970	.948	.939	.918	.899	.895	.897	.904	.920	.935	.949
Kalispell, Mont	26.906	.913	.914	.920	.920	.921	.925	.931	.937	.946	.951	.950	.945	.934	.922	.903	.890	.886	.880	.878	.879	.888	.898	.901	.914
Kansas City, Mo.	29.052	.052	.055	.051	.052	.055	.068	.076	.086	.090	.093	.088	.080	.062	.040	.031	.022	.020	.026	.032	.040	.047	.052	.054	.055
Key West, Fla.	30.036	.026	.017	.011	.011	.018	.032	.045	.056	.065	.071	.063	.045	.031	.014	.005	.998	.001	.009	.027	.035	.043	.045	.045	.031
Marquette, Mich.	29.210	.211	.209	.208	.206	.211	.218	.224	.222	.227	.227	.228	.223	.210	.201	.204	.202	.208	.215	.219	.216	.217	.214	.211	.214
Memphis, Tenn.	29.662	.661	.659	.659	.662	.669	.682	.695	.704	.709	.715	.711	.695	.678	.659	.650	.650	.642	.640	.644	.650	.657	.666	.669	.671
Mt. Tamalpais, Cal.	27.543	.542	.540	.538	.535	.527	.522	.519	.526	.534	.547	.554	.563	.566	.563	.552	.541	.533	.525	.520	.516	.510	.518	.525	.523	.517
New Orleans, La.	30.013	.011	.004	.997	.000	.008	.021	.033	.050	.055	.058	.056	.044	.028	.006	.995	.986	.985	.990	.997	.010	.018	.025	.023	.017
New York, N. Y.	29.645	.643	.637	.637	.644	.655	.668	.677	.673	.667	.658	.648	.632	.615	.602	.600	.603	.610	.630	.628	.638	.637	.640	.638	.638
Philadelphia, Pa.	29.895	.893	.885	.888	.896	.904	.914	.921	.922	.920	.914	.906	.885	.869	.858	.852	.856	.864	.870	.881	.888	.893	.898	.899	.890
Pittsburg, Pa.	29.107	.102	.099	.099	.104	.109	.115	.123	.127	.127	.119	.112	.095	.083	.074	.071	.073	.079	.089	.098	.110	.115	.118	.122	.103
Portland, Oreg.	29.848	.848	.850	.851	.851	.847	.844	.846	.844	.848	.856	.861	.861	.861	.852	.841	.826	.819	.814	.811	.812	.818	.823	.820	.840
St. Louis, Mo.	29.446	.445	.443	.439	.441	.447	.450	.472	.480	.484	.488	.482	.471	.456	.437	.433	.427	.427	.435	.440	.447	.453	.456	.456	.453
St. Paul, Minn.	29.133	.132	.139	.140	.133	.134	.139	.141	.148	.151	.150	.148	.144	.132	.120	.114	.107	.105	.108	.112	.118	.122	.126	.128	.130
Salt Lake City, Utah	25.604	.607	.612	.614	.611	.610	.614	.621	.630	.640	.646	.651	.647	.640	.624	.606	.595	.586	.583	.583	.586	.590	.597	.603	.612
San Diego, Cal.	29.862	.861	.859	.857	.850	.843	.840	.842	.849	.856	.868	.875	.878	.872	.857	.845	.832	.824	.820	.823	.830	.837	.849	.863	.850
San Francisco, Cal.	29.881	.881	.880	.879	.875	.866	.863	.864	.871	.878	.890	.900	.905	.908	.895	.881	.867	.857	.850	.845	.847	.852	.864	.869	.872
Santa Fe, N. Mex.	23.227	.228	.230	.227	.223	.223	.225	.228	.241	.249	.254	.256	.248	.236	.216	.200	.187	.181	.183	.190	.200	.212	.222	.228	.221
Savannah, Ga.	29.981	.980	.972	.969	.978	.992	.007	.020	.028	.033	.031	.018	.998	.977	.963	.956	.957	.964	.972	.975	.986	.990	.995	.998	.989
Washington, D. C.	29.913	.911	.906	.909	.914	.924	.936	.943	.948	.946	.939	.925	.904	.886	.878	.874	.875	.883	.892	.900	.911	.913	.914	.915	.911
West Indies.																									
Basseterre, St. Kitts.	29.968	.957	.951	.954	.963	.984	.003	.019	.025	.021	.002	.981	.963	.949	.946	.950	.957	.966	.980	.995	.001	.000	.997	.986	.980
Bridgetown, Bar.	29.915	.914	.907	.912	.923	.939	.956	.969	.974	.969	.949	.927	.905	.894	.893	.894	.899	.912	.928	.942	.950	.952	.945	.932	.929
Cienfuegos, Cuba*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Havana, Cuba	29.973	.966	.955	.950	.952	.961	.975	.992	.002	.007	.003	.996	.979	.964	.947	.939	.942	.947	.959	.971	.984	.990	.988	.983	.973
Kingston, Jamaica	29.669	.655	.645	.641	.645	.657	.678	.694	.704	.704	.694	.675	.650	.636	.610	.604	.609	.619	.634	.655	.672	.683	.685	.683	.658
Port of Spain, Trin.	29.863	.855	.853	.857	.870	.887	.904	.915	.919	.911	.893	.870	.848	.831	.823	.824	.834	.843	.862	.879	.889	.894	.890	.879	.871
P. Principe, Cuba	29.642	.636	.616	.615	.625	.638	.652	.669	.677	.676	.667	.646	.624	.606	.594	.590	.598	.614	.629	.647	.660	.664	.660	.653	.637
Roseau, Dominica	29.937	.926	.924	.926	.937	.951	.968	.983	.987	.984	.969	.945	.929	.915	.908	.910	.916	.929	.939	.955	.958	.959	.957	.950	.944
San Juan, P. R.	29.932	.918	.912	.920	.931	.944	.958	.969	.977	.972	.957	.938	.920	.904	.892	.896	.904	.917	.933	.946	.954	.955	.951	.941	.935
Santiago de Cuba	29.900	.886	.876	.876	.889	.901	.916	.924	.933	.933	.920	.898	.874	.852	.841	.840	.851	.862	.878	.898	.915	.922	.919	.913	.892
Santo Domingo, S. D.	29.973	.957	.949	.946	.957	.976	.994	.010	.016	.015	.003	.979	.956	.936	.925	.919	.929	.942	.956	.972	.985	.992	.990	.984	.969
Willemstad, Curaçao	29.820	.810	.804	.806	.818	.836	.860	.867	.877	.874	.854	.830	.802	.781	.762	.759	.765	.778	.802	.822	.840	.846	.848	.829	.821

*Record incomplete.

TABLE V.—*Average wind movement for each hour of seventy-fifth meridian time, March, 1900.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex.	8.5	7.8	7.4	7.7	8.3	8.3	7.5	7.9	8.0	9.6	10.3	11.5	11.6	11.2	10.6	10.3	10.3	10.2	10.4	9.8	8.5	8.6	8.4	8.5	9.2
Albany, N. Y.	7.4	7.5	7.9	7.8	8.0	7.9	7.7	8.5	9.7	10.9	11.4	11.9	13.2	12.8	13.2	12.6	12.1	10.8	9.5	9.2	9.2	8.8	8.7	8.1	9.8
Alpena, Mich.	9.8	9.1	8.9	8.8	8.3	8.8	9.5	9.5	11.1	11.9	12.7	13.4	14.3	14.9	14.9	14.2	13.5	12.8	11.6	10.7	10.1	10.0	9.8	9.2	11.2
Amarillo, Tex.	14.8	15.0	15.7	15.9	15.5	14.9	14.7	13.4	13.7	14.0	14.8	16.5	17.0	17.5	17.2	16.8	16.9	17.1	16.4	13.9	12.7	13.8	13.7	14.3	15.3
Atlanta, Ga.	12.5	12.3	12.4	12.2	12.7	14.1	12.0	11.5	11.7	11.7	11.5	12.4	13.2	13.9	14.4	14.4	14.1	13.1	11.4	11.4	11.2	11.4	12.1	12.1	12.4
Atlantic City, N. J.	12.8	12.8	11.8	11.4	11.4	11.1	11.9	12.6	13.9	15.1	15.8	16.1	17.1	16.5	16.8	16.3	15.9	14.5	12.5	11.3	10.8	12.0	12.3	12.2	13.5
Augusta, Ga.	5.9	6.3	5.6	5.5	5.8	4.8	5.1	5.3	6.7	7.7	8.7	10.2	10.8	10.9	11.3	11.3	11.0	9.9	7.5	6.7	6.7	6.4	6.3	5.4	7.6
Baker City, Oreg.	5.7	6.5	6.7	7.0	6.9	7.5	7.4	7.5	7.6	7.6	6.9	5.6	5.1	6.1	6.9	7.3	8.1	8.3	8.0	7.3	6.0	5.2	4.7	5.5	6.7
Baltimore, Md.	5.0	4.7	4.4	4.6	5.0	5.0	5.3	6.0	6.5	7.2	7.1	7.2	7.9	7.4	7.0	6.9	6.4	5.8	5.1	5.5	5.3	5.4	4.8	4.5	5.8
Bismarck, N. Dak.	8.9	8.8	8.4	8.3	8.6	8.6	9.3	9.3	10.2	11.4	13.0	13.8	15.4	14.9	15.5	15.4	15.3	14.6	13.8	11.5	9.9	9.6	8.9	9.5	11.4
Block Island, R. I.	18.6	19.2	18.6	18.7	18.5	19.6	19.7	20.2	19.8	20.2	19.7	18.8	19.7	20.0	20.1	20.4	20.0	19.7	19.7	19.3	19.2	19.2	19.1	19.4	19.5
Boise, Idaho.	4.5	4.5	3.8	3.8	3.3	3.3	3.3	3.1	3.2	3.3	4.2	5.2	5.9	5.7	6.9	7.3	6.9	7.1	7.2	6.8	5.0	5.0	4.7	5.2	4.8
Boston, Mass.	11.0	11.3	11.5	11.7	12.0	11.4	12.2	13.5	14.4	14.5	15.4	15.2	15.9	15.8	15.6	15.6	15.3	14.3	14.1	13.8	13.0	12.1	11.6	11.3	13.4
Buffalo, N. Y.	16.4	17.3	18.1	17.8	17.2	16.6	16.4	17.1	17.2	17.6	18.5	18.8	19.7	20.1	20.5	20.8	20.5	19.5	18.9	18.0	17.6	17.4	16.9	15.9	18.1
Cairo, Ill.	8.6	8.6	9.0	8.4	8.2	8.8	8.4	9.0	9.8	10.6	11.4	11.5	11.1	11.5	12.2	12.2	11.4	10.5	9.5	8.5	8.5	8.7	9.0	8.7	9.8
Cape Henry, Va.	16.0	15.7	16.0	16.1	16.4	16.4	16.0	16.1	16.8	17.6	17 0	17.2	17.2	17.5	17.1	16.2	15.6	14.4	13.8	13.4	13.3	14.7	14.5	14.9	
Carson City, Nev.	7.5	7.3	7.0	6.6	5.7	4.2	4.5	4.4	6.4	4.6	3.6	4.0	5.2	6.7	8.1	8.5	9.9	10.3	9.9	9.4	9.3	8.3	8.4	8.3	15.8
Cedar City, Utah.	8.8	8.5	7.7	7.5	7.4	7.2	6.9	6.5	6.4	5.5	4.1	4.2	5.5	6.5	7.8	8.3	9.5	9.1	8.5	8.3	6.9	6.9	7.3	7.8	7.0
Charleston, S. C.	10.0	10.6	11.2	11.0	9.8	9.6	9.3	9.8	10.6	11.6	12.1	11.6	12.4	12.5	13.6	13.9	13.8	14.3	11.0	11.0	10.7	10.7	10.8	10.0	7.2
Charlotte, N. C.	7.5	7.7	7.0	6.8	7.0	7.1	7.0	8.4	9.3	9.6	10.5	12.0	11.4	11.8	11.3	11.5	11.2	10.6	8.2	8.0	8.0	7.9	7.4	7.5	11.2
Chattanooga, Tenn.	6.7	6.6	7.1	7.1	7.0	6.5	6.7	7.0	7.7	8.8	9.0	10.2	11.1	11.7	11.8	11.3	10.3	10.0	9.0	7.8	6.8	7.1	6.2	6.2	8.9
Cheyenne, Wyo.	8.2	8.7	8.5	8.8	8.3	8.2	8.5	8.4	8.6	9.0	12 6	14.2	14.2	14.5	15.1	15.7	15.7	15.7	14.3	12.3	10.2	8.8	8.5	8.2	8.3
Chicago, Ill.	17.8	18.3	18.6	18.6	19.1	18.1	18.3	18.5	18.5	18.3	18.8	20.7	19.9	19.6	19.8	19.6	19.3	18.3	18.3	18.0	17.1	16.8	16.2	17.2	11.1
Cincinnati, Ohio.	8.7	9.1	8.4	8.8	8.0	8.0	9.1	10.3	10.5	10.6	11.0	12.2	12.5	12.0	12.0	11.9	11.6	10.6	15.6	16.2	10.5	9.5	9.3	8.8	18.5
Cleveland, Ohio.	17.2	16.9	16.9	15.7	15.5	14.6	14.3	14.5	16.1	17.5	18.2	18.9	18.8	18.6	17.3	16.0	16.0	15.6	16.2	8.0	16.3	17.6	18.2	17.7	10.1
Columbia, Mo.	8.8	9.1	9.3	9.7	10.2	9.5	9.2	9.5	9.8	10.3	11.2	11.8	12.9	12.4	12.6	12.6	12.5	11.6	9.8	9.2	9.0	8.8	8.8	8.9	16.8
Columbus, Ohio.	9.0	8.9	8.6	8.6	8.5	8.1	8.4	8.6	9.8	10.0	10.3	10.6	10.6	11.1	11.4	11.1	11.1	10.8	10.3	9.2	8.5	9.5	9.1	8.9	10.3
Concordia, Kans.	6.1	6.3	6.0	6.2	6.5	6.5	6.0	5.8	6.4	8.9	9.5	9.5	9.8	9.9	9.9	9.9	9.9	9.9	8.2	6.5	5.7	5.7	6.2	6.1	9.6
Corpus Christi, Tex.	11.8	11.2	10.5	11.6	11.2	10.8	11.5	11.5	10.9	11.1	12.5	13.1	14.2	14.6	15.1	16.1	15.6	15.4	14.7	13.1	12.3	13.1	11.9	6.1	7.5
Davenport, Iowa.	8.2	8.5	7.8	7.8	8.1	7.8	8.5	8.4	9.4	9.6	10.7	11.0	12.4	12.1	14.3	11.7	11.0	10.2	8.7	8.6	8.1	7.7	7.4	7.4	12.8
Denver, Colo.	6.9	7.0	6.6	7.2	7.7	7.1	6.6	6.6	7.5	7.4	6.8	6.9	8.0	8.6	8.8	8.9	9.1	11.1	11.7	11.4	9.8	9.2	8.5	7.2	9.5
Des Moines, Iowa.	8.6	8.4	8.2	8.3	8.5	7.7	7.9	8.4	9.2	10.5	12.2	12.4	13.0	12.9	13.1	13.2	13.0	11.9	10.8	9.0	7.9	8.2	8.4	8.9	8.2
Detroit, Mich.	11.1	10.6	10.0	9.6	9.8	9.9	9.9	10.5	11.0	12.0	12.5	13.0	13.5	14.1	13.5	12.6	12.5	12.5	11.3	11.1	9.1	11.1	10.5	10.5	10.0
Dodge, Kans.	9.2	8.7	9.1	9.9	9.7	9.5	8.7	8.3	10.5	10.7	12.1	12.1	11.7	13.5	12.2	12.5	12.5	12.3	11.7	10.2	9.1	9.0	9.3	9.3	11.5
Dubuque, Iowa.	7.9	8.4	7.9	7.7	7.8	8.2	8.0	7.9	9.4	11.3	11.7	12.9	12.9	12.3	12.7	12.7	11.6	10.3	8.8	8.2	7.8	7.8	7.3	7.3	10.3
Duluth, Minn.	11.2	10.9	11.1	9.8	10.4	9.7	10.3	10.9	11.4	12.1	12.1	12.7	13.4	12.6	12.9	13.4	13.2	9.6	11.1	11.9	9.8	8.5	7.2	8.2	9.7
Eastport, Me.	13.6	13.5	14.0	14.1	14.3	14.1	14.4	15.4	16.6	16 0	14.9	15.7	15.9	16.1	16.7	16.9	16.3	13.0	12.3	12.5	11.2	11.1	10.5	10.5	8.2
Elkins, W. Va.	5.8	5.5	4.9	4.7	4.6	4.2	4.5	5.0	5.5	6.8	7.4	7.9	8.3	8.7	8.6	8.2	7.6	7.3	6.2	5.6	5.2	5.0	4.9	4.7	10.0
El Paso, Tex.	9.8	10.1	9.8	9.8	9.9	10.5	9.4	9.7	9.5	9.5	11.2	11.5	11.5	12.3	12.7	12.7	12.8	12.5	13.5	13.1	12.2	11.5	11.4	11.3	11.5
Erie, Pa.	12.7	13.0	13.3	13.1	12.5	12.0	11.5	12.5	13.2	13.5	13.7	14.1	14.7	15.2	15.4	14.8	13.1	12.2	11.5	11.0	11.1	10.7	12.0	12.8	10.3
Escanaba, Mich.	7.1	6.8	7.1	7.9	8.5	8.3	8.0	7.9	8.8	10.1	10.7	11.5	11.5	12.3	12.5	12.8	13.1	12.9	10.7	9.0	8.8	8.5	8.1	7.4	9.7
Eureka, Cal.	4.7	4.3	3.9	4.1	3.8	3.5	3.4	4.5	5.4	5.4	5.3	5.5	5.5	6.9	8.4	9.7	10.3	9.2	9.0	8.8	8.1	7.4	4.7	6.0	9.6
Evansville, Ind.	7.7	7.2	7.7	7.4	7.1	7.3	7.2	7.8	9.6	10.2	10.4	10.2	10.2	10.3	10.8	10.3	10.6	9.5	8.6	7.6	7.6	7.8	7.4	8.5	6.0
Fort Smith, Ark.	6.2	6.3	6.6	6.3	6.2	6.4	6.4	7.0	7.2	7.4	7.8	8.9	9.3	8.7	10.3	10.6	9.5	9.2	7.6	6.9	6.9	6.3	6.3	7.4	6.0
Fort Worth, Tex.																									
Fresno, Cal.	4.8	4.7	4.6	4.6	4.3	4.3	4.3	4.3	4.3	4.0	4.3	5.0	5.5	5.7	5.6	5.6	5.7	5.9	6.0	6.2	5.6	5.2	5.0	5.2	5.0
Galveston, Tex.	8.7	9.0	9.4	8.6	9.1	9.6	9.7	10.4	9.9	9.6	9.8	10.3	10.4	10.3	10.2	9.7	9.9	9.7	8.8	8.6	8.8	8.6	8.5	8.8	8.6
Grand Haven, Mich.	10.9	10.4	10.2	10.1	9.4	9.2	9.6	9.9	10.9	11.8	12.3	12.7	12.8	13.0	13.0	13.1	12.8	12.1	11.1	11.1	10.5	10.5	11.5	11.3	9.5
Grand Junction, Colo.	4.3	4.3	4.5	4.5	5.3	5.2	5.3	5.5	5.0	5.1	6.3	6.5	6.2	5.8	6.4	6.7	7.4	7.3	6.4	5.1	3.9	3.9	3.8	3.8	11.4
Green Bay, Wis.	8.0	8.0	8.1	8.3	8.3	8.1	8.3	8.6	9.7	10.3	10.7	10.9	10.7	11.0	10.8	11.3	10.5	10.0	8.9	8.3	8.1	7.9	8.0	9.3	5.5
Harrisburg, Pa.	7.8	8.3	7.9	7.9	7.9	8.7	8.6	9.5	10.1	10.0	10.2	10.7	11.3	10.8	10.6	10.9	11.2	10.0	9.0	9.2	8.5	7.7	7.8	7.9	9.3
Hatteras, N. C.	17.5	17.3	19.0	19.5	20.0	19.6	18.9	18.1	18.6	17.7	17.7	16.9	16.0	16.1	16.8	17.5	18.0	17.8	17.7	18.2	18.3	17.9	17.8	17.7	17.9
Havre, Mont.	9.9	10.3	9.6	9.4	9.8	9.8	9.2	8.7	8.6	9.6	10.8	11.8	11.9	11.6	11.3	11.4	12.0	12.0	12.0	11.2	10.2	10.3	10.2	10.5	
Helena, Mont.	8.5	9.2	9.4	8.6	8.6	8.1	7.7	6.1	6.0	5.5	5.7	7.3	8.2	9.2	9.4	8.7	8.9	9.0	8.9	8.0	7.9	7.5	7.7	7.9	7.9
Huron, S. Dak.	11.7	12.1	12.3	13.1	13.4	12.7	12.5	13.0	14.0	15.3	16.3	16.4	16.5	16.4	17.1	16.9	15.3	12.6	11.5	11.0	10.4	11.0	11.6	13.9	
Independence, Cal.	7.6	7.4	7.8	7.8	7.9	7.5	7.8	7.4	7.6	7.2	7.7	8.3	8.7	8.6	8.5	9.4	9.2	9.5	9.4	8.5	7.7	7.8	7.9	9.3	
Indianapolis, Ind.	10.9	11.0	11.1	10.9	10.2	10.6	10.3	10.9	12.4	12.9	13.5	14.3	14.3	13.8	14.5	14.3	12.8	12.0	11.5	11.2	10.6	11.3	11.0	12.0	
Jacksonville, Fla.	6.1	6.4	7.1	6.9	6.5	6.3	6.0	7.1	8.5	9.3	10.2	11.8	11.8	11.5	11.3	10.1	8.0	8.0	6.3	6.4	6.2	6.3	5.7	8.2	
Jupiter, Fla.	10.9	11.0	10.9	10.6	10.4	10.2	10.1	10.3	11.9	12.9	14.1	15.1	15.6	15.4	14.6	13.1	11.8	11.9	11.5	11.5	11.5	11.0	11.0	12.3	
Kalispell, Mont.	6.5	6.4	6.3	6.2	6.0	5.9	6.3	5.7	5.1	5.3	5.3	4.8	5.5	6.6	7.5	8.6	8.7	8.0	7.4	5.7	5.9	5.9	6.2	6.3	
Kansas City, Mo.	7.9	8.1	8.5	9.1	8.8	8.4	8.2	8.4	8.7	9.6	10.4	10.9	11.0	10.8	10.9	10.9	11.0	10.8	9.5	8.3	7.9	7.6	7.8	7.7	
Keokuk, Iowa.	8.0	8.5	8.3	8.3	8.6	8.7	9.2	9.1	9.8	10.5	11.3	11.8	12.2	12.5	12.6	12.2	10.0	10.8	10.0	9.5	7.5	7.7	7.5	7.5	9.2
Key West, Fla.	11.5	11.0	11.0	10.8	11.0	10.7	10.9	11.2	11.8	12.1	12.8	12.7	12.7	13.2	13.3	12.8	12.0	11.6	11.5	11.5	12.2	12.1	11.9	9.7	
Kittyhawk, N. C.	15.9	17.4	17.8	17.9	18.3	16.8	17.1	18.6	18.3	18.3	18.4	16.8	16.8	13.3	19.2	19.2	17.9	16.3	14.8	12.2	15.0	15.2	11.8	11.9	
Knoxville, Tenn.	7.7	7.5	7.5	7.2	6.9	7.6	8.4	8.3	8.6	9.2	10.5	10.5	11.0	11.5	12.0	12.8	11.7	10.8	7.9	7.8	7.7	15.2	15.6	17.3	
La Crosse, Wis.	6.7	6.8	6.8	6.8	7.3	7.3	8.0	7.6	8.0	8.6	8.9	9.7	10.1	10.0	10.5	10.8	10.4	9.6	8.8	7.1	6.7	7.2	7.3	7.6	8.3
Lander, Wyo.	8.3	8.3	8.6	8.4	8.8	8.2	7.6	8.0	8.6	8.9	9.7	10.1	10.0	10.5	10.8	10.4	9.6	8.8	7.2	7.2	4.5	4 1	4.0	4.4	
Lexington, Ky.	11.0	11.6	10.7	10.4	10.8	10.5	11.5	12.6	13.5	14.1	13.7	14.8	14.5	14.1	14.3	14.5	13.8	12.3	12.3	12.6	12.0	12.2	11.4	12.5	
Little Rock, Ark.	7.7	7.6	6.7	7.2	7.3	7.4	8.0	8.2	8.7	9.5	10.0	9.8	9.5	9.7	10.9	10.1	9.6	8.8	7.9	7.4	4.6	2.7	7.8	8.5	
Los Angeles, Cal.	2.3	2.0	2.2	2.0	2.2	2.0	2.0	2.2	2.2	2.3	2.9	3.1	3.4	3.8	4.9	6.1	7.1	7.2	7.5	6.5	4.6	2.7	2.1	3.8	
Louisville, Ky.	9.0	9.0	8.6	9.8	8.2	8.7	8.4	8.9	9.7	10.6	11.1	11.9	11.9	12.0	12.8	12.8	12.7	10.8	10.2	10.3	10.1	9.1	9.3	10.3	
Lynchburg, Va.	4.5	3.8	4.1	4.1	3.7	3.8	3.7	3.5	4.9	6.5	7.9	9.0	9.3	9.9	10.4	10.6	9.0	7.8	8.9	8.0	4.0	4.0	4.7	5.2	
Macon, Ga.	7.0	6.1	5.7	6.0	5.4	5.4	5.7	5.6	6.5	7.9	9.0	11.0	12.1	12.6	13.4	14.1	13.8	12.5	9.7	9.9	6.2	6.9	6.0	7.5	
Marquette, Mich.	10.2	10.8	10.7	10.6	10.5	9.5	9.2	9.9	10.5	10.8	11.6	10.6	11.8	10.9	11.0	11.2	11.0	9.9	8.7	9.1	10.0	10.3	10.4	11.0	
Memphis, Tenn.	11.0	10.5	10.7	10.6	10.2	10.6	9.7	10.6	11.5	11.9	11.6	12.4	13.3	13.5	13.7	14.0	14.8	14.8	14.8	14.8	14.9	14.2	13.4	12.1	
Milwaukee, Wis.	12.7	12.7	12.5	12.0	12.0	11.5	11.8	12.4	13.3	13.5	13.7	14.0	14.8	14.8	14.8	14.8	14.9	14.2	13.4	12.1	11.1	10.4	10.1	10.6	
Mobile, Ala.	6.1	6.5	6.3	6.1	5.8	5.7	5.9	6.5	6.7	7.6	7.7	9.0	9.4	9.7	9.8	10.0	10.0	9.9	8.5	7.3	7.6	7.9	7.4	8.9	
Montgomery, Ala.	6.5	6.3	6.1	6.4	6.2	6.8	6.8	6.9	7.7	8.1	8.9	9.1	9.2	9.2	8.9	9.0	9.0	8.5	7.3	6.6	6.5	6.3	6.1	6.4	
Moorhead, Minn.	11.2	11.2	11.1	11.5	11.3	10.8	10.5	11.8	12.4	12.8	13.7	14.3	14.4	14.3	13.9	13.7	12.9	12.8	11.7	11.7	11.5	11.4	11.2	11.2	
Mount Tamalpais, Cal.	19.6	19.2	19.3	18.8	18.1	18.3	18.7	15.9	14.9	15.0	13.7	12.8	10.6	9.6	13.2	10.4	12.8	13.5	11.0	10.7	10.5	10.8	10.8	15.2	
Nantucket, Mass.	12.3	12.2	12.5	12.2	12.2	12.6	12.7	14.0	14.4	14.3	14.6	15.0	14.0	13.8	14.1	14.1	13.5	12.9	11.8	12.6	13.2	13.1	13.5	13.1	
Nashville, Tenn.	6.7	6.5	6.4	6.8	6.4	6.0	6.1	6.2	6.7	7.8	8.5	8.9	9.3	9.5	9.7	10.4	10.3	9.5	8.6	8.1	7.1	6.7	6.4	6.5	
Neah, Wis.	4.9	5.2	5.6	5.4	5.4	6.0	6.2	6.7	6.8	6.9	7.5	8.7	9.3	9.6	10.7	10.7	10.3	9.5	9.1	7.6	6.1	6.1	5.4	5.5	
New Haven, Conn.	8.5	8.4	9.2	9.0	8.5	8.4	8.3	9.1	9.6	10.2	10.4	11.4	11.7	11.8	12.8	13.2	12.9	11.4	9.5	8.8	8.1	8.1	8.2	8.1	
New Orleans, La.	7.7	7.5	8.2	8.1	7.8	8.3	7.4	7.6	8.6	8.9	10.1	10.7	11.8	10.7	10.7	10.6	9.6	8.7	7.2	7.4	7.7	7.8	8.0	8.0	

TABLE V.—*Average wind movement, etc.*—Continued.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
New York, N. Y.	17.3	16.7	17.0	17.5	17.5	16.8	16.5	18.1	18.9	19.8	20.5	21.7	21.8	23.5	23.2	22.5	22.9	21.0	18.9	18.1	17.6	17.3	17.2	16.3	19.1
Norfolk, Va.	10.7	10.4	10.4	11.2	11.6	11.8	11.3	11.7	12.7	12.7	13.0	13.1	13.5	13.9	14.0	14.4	14.3	12.7	11.1	10.3	10.2	10.8	10.5	10.4	11.9
Northfield, Vt.	9.0	8.5	9.0	8.0	8.0	7.2	6.7	8.0	10.6	11.6	12.8	13.0	14.0	13.7	14.1	14.2	12.7	11.7	10.9	9.9	9.0	9.1	9.2	9.3	10.5
North Platte, Nebr.	7.7	7.2	6.8	7.0	6.8	6.9	7.1	7.2	7.3	9.6	10.9	11.4	11.5	12.5	12.0	11.7	12.2	12.3	11.1	9.3	8.7	8.1	7.8	7.5	9.2
Oklahoma, Okla.	9.2	8.7	8.8	8.7	8.8	8.7	8.6	8.9	10.1	11.8	14.1	14.6	14.5	14.0	14.0	13.9	14.2	13.6	12.2	10.1	9.0	8.6	8.9	9.5	11.0
Omaha, Nebr.	9.6	9.7	9.8	10.1	9.6	9.6	9.8	15.2	15.6	10.8	12.5	12.9	13.0	13.4	13.5	13.6	13.6	12.1	10.3	9.3	9.5	9.3	9.1	9.1	10.9
Oswego, N. Y.	15.1	14.7	13.9	14.0	14.4	14.5	14.8	7.2	7.5	15.5	15.6	14.8	15.7	15.8	15.9	16.1	15.8	15.4	14.7	14.4	14.3	14.4	15.0	15.0	15.0
Palestine, Tex.	7.8	8.5	8.1	7.4	7.4	7.4	6.8	7.5	8.0	8.5	9.0	9.0	8.9	9.0	9.6	10.4	10.1	9.5	8.7	8.1	7.1	7.7	8.4	7.8	8.3
Parkersburg, W. Va.	6.6	6.9	7.2	6.6	6.3	6.4	6.8	7.5	8.0	8.4	8.4	8.5	9.6	8.9	9.3	10.0	9.4	8.7	7.6	7.5	7.5	7.5	6.8	6.7	7.8
Pensacola, Fla.	9.7	9.5	9.0	9.8	10.0	9.5	9.5	9.7	10.9	11.5	11.1	11.4	11.4	12.1	12.1	12.0	12.0	11.8	10.9	9.2	8.8	8.9	9.2	9.4	10.4
Phenix, Ariz.	3.6	3.4	2.9	3.3	3.8	4.0	3.7	4.0	4.4	4.0	5.0	5.3	4.6	4.8	5.0	5.6	6.1	6.5	6.5	4.8	3.9	4.3	3.4	3.3	4.4
Philadelphia, Pa.	10.5	10.5	10.0	9.8	9.9	10.9	11.0	11.8	13.0	13.9	13.8	13.7	14.6	14.1	13.9	13.6	13.3	12.3	10.7	10.8	11.2	11.4	11.1	11.0	12.0
Pierre, S. Dak.	10.6	10.5	10.4	9.9	9.5	8.8	8.6	9.3	10.1	11.7	13.5	15.2	15.6	16.5	17.1	17.8	17.7	17.9	16.1	14.9	13.1	12.3	11.3	11.3	12.9
Pittsburg, Pa.	7.8	7.6	7.4	7.7	7.5	7.2	7.5	8.4	8.8	8.8	9.2	9.0	9.5	9.7	9.3	9.4	8.3	9.5	8.3	7.9	7.8	7.8	7.7	7.9	8.3
Pocatello, Idaho	9.4	8.8	8.9	10.1	9.3	8.5	8.2	8.5	8.4	7.8	9.2	9.8	9.6	10.0	10.4	10.7	9.6	9.8	10.4	9.6	8.0	8.5	9.1	9.9	9.3
Point Reyes Lt., Cal.	13.3	12.1	12.2	11.6	11.7	12.0	11.8	11.0	10.9	10.7	10.7	10.3	11.0	9.9	10.6	11.0	9.9	11.6	12.9	13.5	13.5	14.6	13.3	12.7	10.5
Port Crescent, Wash.	3.0	3.8	3.2	3.1	2.9	3.1	3.5	3.5	3.3	2.6	3.1	2.8	4.2	5.7	6.2	6.3	6.3	6.5	5.5	5.7	4.3	3.8	3.3	3.2	4.1
Port Huron, Mich.	12.6	12.2	12.8	12.5	11.7	11.7	11.5	12.4	13.4	13.9	13.8	15.3	15.9	15.9	15.9	15.7	14.3	13.8	13.4	12.1	12.2	13.3	12.6	13.0	13.4
Portland, Me.	8.1	8.2	8.0	7.8	7.7	7.7	7.8	7.5	8.4	9.9	10.1	10.4	10.6	11.9	11.6	11.7	11.4	10.0	10.0	9.6	9.2	9.1	9.1	8.9	9.4
Portland, Oreg.	7.7	7.7	7.4	7.3	7.9	7.8	7.6	8.4	8.9	8.7	8.8	8.9	10.0	10.5	11.3	11.7	12.7	11.5	11.0	9.7	9.2	9.4	9.2	8.2	9.2
Pueblo, Colo.	6.5	6.4	5.4	5.3	5.5	4.6	4.3	3.9	4.0	4.1	5.3	6.0	6.8	8.0	8.9	10.1	10.1	10.6	10.4	10.1	9.0	8.3	7.3	7.0	7.0
Raleigh, N. C.	7.9	7.5	7.1	7.3	6.6	6.8	6.8	7.0	8.9	9.4	10.1	10.3	11.2	11.3	11.3	10.9	10.6	8.7	7.6	7.5	7.3	7.1	7.1	7.1	8.5
Rapid City, S. Dak.	6.9	7.2	7.0	7.1	6.7	7.2	7.8	6.9	7.1	8.4	9.8	11.0	12.7	12.8	14.0	14.7	14.2	14.1	13.6	11.5	9.6	9.6	7.7	7.2	9.7
Red Bluff, Cal.	5.7	5.8	5.2	5.5	5.8	6.2	6.9	6.5	7.1	7.7	6.3	7.2	7.9	8.3	8.0	8.4	8.4	8.1	7.7	8.0	7.3	6.4	6.1	6.0	5.7
Richmond, Va.	8.1	7.9	7.3	7.4	7.0	6.2	6.4	7.1	7.7	8.8	10.5	10.8	11.4	11.0	11.1	11.1	10.8	10.2	8.9	7.4	7.3	7.1	7.5	7.2	7.2	6.8	8.4
Rochester, N. Y.	9.3	9.5	9.4	9.1	9.0	9.0	9.5	9.6	10.8	11.3	11.8	11.5	12.0	12.0	12.2	12.0	12.2	11.9	11.0	10.0	9.6	9.9	9.8	9.7	9.2	10.4
Roseburg, Oreg.	2.3	1.9	2.0	1.9	2.1	1.8	1.9	2.0	2.2	2.2	2.3	2.7	3.8	4.8	4.5	5.6	5.5	5.6	5.9	5.9	5.8	4.8	4.1	3.4	2.8	3.4
Sacramento, Cal.	8.2	7.9	7.3	7.3	7.9	7.8	7.5	7.5	7.5	7.4	6.4	6.7	7.4	7.6	8.4	8.4	8.8	7.8	7.8	7.5	7.3	6.9	7.0	7.5	8.3	7.5
St. Louis, Mo.	11.6	11.4	11.1	11.9	11.8	11.6	12.0	12.0	11.3	12.2	12.7	12.7	13.1	13.2	13.7	13.8	13.8	13.9	12.7	11.9	10.6	10.5	10.5	11.0	11.0	12.0
St. Paul, Minn.	7.8	7.6	7.5	8.1	8.4	8.7	8.8	8.8	9.2	10.1	10.9	11.3	11.5	11.9	12.2	12.5	12.3	11.8	10.8	9.8	8.7	8.2	8.0	8.0	7.5	9.6
Salt Lake City, Utah.	4.5	4.4	4.6	4.4	4.8	4.5	4.3	4.2	3.8	3.5	3.2	4.9	5.0	6.3	8.4	9.2	11.0	9.6	9.8	10.6	10.1	9.6	6.5	5.3	5.3	6.3
San Antonio, Tex.	9.0	7.9	7.8	7.6	7.7	7.5	7.3	7.3	7.5	8.1	9.2	10.0	10.7	11.3	10.5	10.5	9.8	11.2	11.0	10.0	9.6	6.9	6.9	5.4	10.2	9.1
San Diego, Cal.	3.5	3.4	3.6	3.9	3.4	3.7	3.7	3.7	3.9	3.8	4.1	4.5	6.2	7.3	7.3	9.1	10.4	11.2	10.9	10.5	8.6	11.0	11.3	10.7	4.1	5.8
Sandusky, Ohio	10.8	10.6	10.0	9.5	8.9	8.8	8.7	8.8	9.5	10.8	11.9	11.7	12.0	12.3	12.0	11.8	10.9	10.5	4.3	4.4	4.3	4.3	4.3	4.4	10.4	10.6
Sandy Hook, N. J.*																										
San Francisco, Cal.	9.2	9.2	7.7	7.8	7.8	6.7	6.6	6.4	6.5	6.8	6.7	7.1	7.1	8.3	9.2	10.2	11.7	13.4	14.4	16.0	15.6	15.6	14.3	11.9	10 0	10.0
San Luis Obispo, Cal.	2.8	2.6	2.5	3.2	2.8	2.8	2.8	3.3	4.1	3.6	3.7	4.1	8.3	9.0	9.8	10.0	10.3	8.9	9.3	9.1	8.2	6.5	5.4	4.3	3.6	4.9
Santa Fe, N. Mex.	5.1	5.1	5.2	4.9	4.3	4.2	3.7	4.3	4.5	4.6	6.6	9.9	11.4	13.1	14.2	15.1	15.9	15.7	15.1	13.9	11.7	11.0	8.9	8.4	5.0	6.7
Sault Ste. Marie, Mich.	8.0	7.5	7.5	7.4	8.0	8.3	8.6	8.3	8.9	9.9	10.1	9.9	10.5	11.5	11.8	12.3	11.7	10.7	9.5	8.2	7.5	7.5	8.9	7.5	8.0	10.6
Savannah, Ga.	7.5	7.7	7.5	7.6	7.7	7.7	7.6	6.9	7.7	8.9	9.6	9.9	10.1	11.4	11.5	5.7	5.5	6.6	6.5	7.2	7.4	7.4	8.9	7.4	7.6	8.9
Seattle, Wash.	4.9	4.3	4.7	5.0	5.0	4.7	4.6	5.1	4.9	4.5	5.0	5.1	5.5	5.7	6.6	7.2	8.0	8.4	8.0	7.2	7.6	7.0	5.8	5.6	5.1	5.7
Shreveport, La.	7.3	6.6	6.9	6.0	5.7	5.9	6.1	5.8	6.2	7.3	8.3	8.6	8.5	8.6	9.0	9.8	8.0	8.4	7.7	7.2	6.4	6.5	7.0	7.0	7.4	7.1
Sioux City, Iowa	12.6	12.3	12.3	13.0	13.5	14.2	14.4	14.2	14.7	16.8	17.4	17.9	18.4	17.7	17.6	18.2	18.4	17.5	15.8	14.0	13 3	13.4	13.6	13.5	15.2
Spokane, Wash.	5.3	5.1	4.8	5.1	5.1	5.1	4.7	5.3	5.5	5.5	5.4	6.6	6.7	7.2	7.3	7.0	8.0	8.4	7.7	6.9	6.8	6.4	6.0	5.5	5.3	5.9
Springfield, Ill.	9.8	9.7	10.4	10.9	11.0	10.7	10.5	11.1	11.7	12.7	13.3	12.9	13.6	13.7	13.7	13.8	13.4	13.1	11.4	10.1	10.3	10.0	10.3	9.7	11.6
Springfield, Mo.	9.9	9.9	10.0	9.5	9.6	9.7	9.9	10.2	10.2	11.2	12.2	11.9	12.4	12.6	12.8	12.9	12.6	12.1	11.2	10.0	9.7	9.8	9.5	9.5	10.8
Tacoma, Wash.	6.2	5.9	6.2	6.2	6.3	6.1	5.8	6.3	8.2	9.6	9.8	10.4	10.6	10.7	10.8	10.6	10.3	9.5	8.2	6.2	6.5	6.2	5.9	5.9	7.8
Tampa, Fla.	11.7	11.3	10.9	11.0	11.0	10.9	10.9	11.1	11.8	12.3	13.1	13.5	14.3	13.9	14.5	13.9	13.5	13.5	13.0	12.5	12.1	11.6	11.9	11.9	12.3
Toledo, Ohio	7.6	7.0	6.7	6.8	7.1	6.8	7.4	7.2	7.7	8.1	7.9	7.8	8.4	8.6	8.5	8.3	7.7	7.3	6.8	6.3	6.0	6.4	6.4	6.3	7.3
Vicksburg, Miss.																									
Vineyard Haven, Mass.	9.7	9.7	9.4	9.8	9.9	9.7	10.3	10.4	11.3	11.6	12.3	11.7	12.4	12.7	13.1	12.9	12.4	10.8	10.3	11.1	11.2	11.0	10.4	9.7	11.0
Walla Walla, Wash.	5.0	5.2	5.7	5.1	5.1	4.5	4.4	4.0	4.3	4.0	4.3	4.6	5.3	5.8	6.2	7.1	7.3	6.6	6.2	5.4	5.1	5.1	5.7	5.1	5.3
Washington, D. C.	7.0	7.3	7.0	6.9	7.2	7.1	7.5	8.4	9.6	10.8	11.5	12.3	11.7	12.0	11.7	12.0	11.0	11.1	9.6	8.1	8.0	7.5	7.2	7.3	7.1	9.0
Wichita, Kans.	7.3	6.9	7.3	7.5	7.9	7.1	7.5	8.3	8.6	9.9	10.3	10.6	12.6	12.7	12.1	12.0	11.8	11.6	11.3	10.1	8.3	7.2	7.3	7.5	7.5	9.2
Williston, N. Dak.	9.2	9.4	9.2	9.3	9 1	9.8	9.7	10.2	9.9	10.3	10.6	12.6	14.9	14.6	15.5	15.8	16.2	15.2	13.7	12.6	10.6	9.7	9.5	8.7	11.5
Wilmington, N. C.	9.1	9.5	9.4	9.3	9.1	8.7	8.3	8.2	9.0	10.4	12.1	12.5	13.0	13.6	13.4	14.2	13.5	12.4	9.9	8.0	8.7	8.4	8.8	8.5	10.4
Winnemucca, Nev.	8.2	8.5	9.9	5.4	9.6	9.5	9.4	9.1	9.1	9.5	16.7	16.8	16.4	13.3	11.3	12.0	12.4	12.7	11.6	12.2	11.5	9.7	8.1	8.3	9.0	10.0
Woods Hole, Mass.	16.4	16.6	16.6	17.5	17.7	18.2	17.7	18.8	17.6	17.3	16.7	16.8	16.4	13.6	13.5	12.6	12.0	11.5	11.0	10.9	11.1	11.5	11.7	11.3	10.6	12.0
Yankton, S. Dak.	9.3	9.7	10.3	10.8	10.1	9.4	9.9	10.3	10.4	14.0	12.3	12.6	13.6	13.5	12.6	12.8	11.5	9.7	8.9	8.4	8.4	8.2	7.6	7.2	10.3
West Indies.																									
Basseterre, St. Kitts	10.8	11.6	11.5	11.5	11.4	11.5	11.9	12.4	13.5	13.6	14.0	13.6	14.3	15.7	16.5	17.1	17.2	17.1	15.8	14.3	12.2	10.5	10.5	10.3	9.7	11.9
Bridgetown, Bar.	7.3	7.5	6.9	7.1	6.7	7.2	9.4	12.8	14.3	14.5	14.7	14.4	14.2	14.0	13.5	13.9	12.3	11.2	8.8	6.3	5.1	5.0	4.6	4.7	4.8	7.2
Cienfuegos, Cuba*																										
Havana, Cuba	8.9	8.2	7.6	7.7	7.9	8.3	8.6	8.8	11.2	13.6	14.6	14.3	15.7	16.5	17.1	17.2	17.1	15.8	14.3	12.2	10.5	10.5	10.3	9.7	11.9
Kingston, Jamaica	4.8	4.9	5.0	4.9	5.0	5.1	4.8	4.3	4.4	6.5	9.3	11.4	12.9	13.7	13.9	12.3	11.2	8.8	6.3	5.1	5.0	4.6	4.7	4.8	7.2
Port of Spain, Trin.	2.3	2.0	2.4	2.4	2.5	2.4	3.1	5.4	7.0	8.0	9.0	9.0	8.8	8.5	8.9	8.5	6.9	5.4	3.7	2.8	2.6	3.0	2.6	2.3	5.0
Puerto Principe, Cuba	4.5	4.4	4.4	4.0	4.2	4.0	4.1	5.5	9.9	11.8	11.2	11.2	11.4	11.9	10.9	11.0	11.9	10.5	7.6	6.5	5.7	5.1	4.4	4.4	7.5
Roseau, Dominica																									
San Juan, Puerto Rico	10.3	9.7	9.5	9.3	8.7	8.6	8.2	10.6	14.7	17.1	18.1	19.6	19.9	20.0	19.6	18.7	17.8	16.0	14.1	13.5	13.0	11.6	10.7	10.2	13.7
Santiago de Cuba	2.9	2.9	2.8	2.6	2.7	2.8	2.7	3.6	4.8	6.2	6.7	7.4	8.1	7.9	7.6	6.7	5.6	3.8	3.8	3.7	3.7	3.7	3.6	4.8	
Santo Domingo, S. D.	4.2	4.6	4.9	5.1	4.9	4.7	4.8	5.3	6.6	7.8	8.7	9.2	8.4	9.2	9.4	8.8	8.1	7.3	6.5	5.8	5.4	5.2	4.9	4.7	6.4
Willemstad, Curaçao.	11.6	11.5	11.3	11.3	11.3	11.5	11.9	14.4	15.4	16.4	16.5	16.7	16.9	16.7	16.4	16.5	15.7	14.8	13.5	13.2	12.9	12.6	12.4	11.9	13.9

*Record incomplete.

TABLE VI.—*Resultant winds from observations at 8 a. m. and 8 p. m., daily, during the month of March, 1900.*

Stations.	Component direction from—				Resultant.	
	N.	S.	E.	W.	Direction from—	Duration.
New England.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
Eastport, Me	22	12	9	33	n. 67 w.	26
Portland, Me	22	11	4	27	n. 64 w.	26
Northfield, Vt	30	24	5	14	n. 56 w.	11
Boston, Mass	17	15	7	38	n. 87 w.	31
Nantucket, Mass	26	15	9	29	n. 61 w.	23
Woods Hole, Mass	26	15	8	27	n. 60 w.	22
Block Island, R. I	18	13	10	34	n. 78 w.	24
New Haven, Conn	30	10	12	22	n. 27 w.	22
Middle Atlantic States.						
Albany, N. Y	22	15	7	28	n. 72 w.	22
Binghamton, N. Y.†	16	3	3	17	n. 47 w.	19
New York, N. Y	25	13	12	29	n. 55 w.	21
Harrisburg, Pa.†	12	4	8	14	n. 37 w.	10
Philadelphia, Pa	27	15	12	24	n. 45 w.	17
Atlantic City, N. J	26	8	13	30	n. 48 w.	25
Cape May, N. J.	27	12	12	24	n. 39 w.	19
Baltimore, Md	20	13	13	28	n. 65 w.	17
Washington, D. C	30	15	12	19	n. 25 w.	17
Lynchburg, Va	23	13	17	24	n. 35 w.	12
Norfolk, Va	24	19	16	17	n. 11 w.	5
Richmond, Va	25	20	11	17	n. 50 w.	8
South Atlantic States.						
Charlotte, N. C	20	25	16	18	s. 22 w.	5
Hatteras, N. C	25	17	7	26	n. 67 w.	21
Raleigh, N. C	21	21	7	26	w.	19
Wilmington, N. C	23	17	12	23	n. 61 w.	12
Charleston, S. C	23	19	14	22	n. 63 w.	9
Augusta, Ga	18	18	12	30	n. 74 w.	19
Savannah, Ga	19	18	15	22	n. 82 w.	7
Jacksonville, Fla	16	17	22	19	s. 72 e.	3
Florida Peninsula.						
Jupiter, Fla	17	22	22	13	s. 61 e.	10
Key West, Fla	22	16	31	5	n. 75 e.	24
Tampa, Fla	20	15	18	23	n. 45 w.	7
Eastern Gulf States.						
Atlanta, Ga	22	16	11	28	n. 71 w.	18
Macon, Ga†	10	7	5	13	n. 69 w.	8
Pensacola, Fla.†	15	8	9	7	n. 16 e.	7
Mobile, Ala	28	20	9	16	n. 41 w.	11
Montgomery, Ala	23	19	13	18	n. 51 w.	6
Meridian, Miss.†	16	5	9	11	n. 10 w.	11
Vicksburg, Miss	22	20	21	13	n. 76 e.	8
New Orleans, La	22	18	17	18	n. 14 w.	4
Western Gulf States.						
Shreveport, La	20	19	23	13	n. 84 e.	10
Fort Smith, Ark	18	7	33	10	n. 69 e.	25
Little Rock, Ark	24	21	15	20	n. 59 w.	6
Corpus Christi, Tex	15	20	38	6	s. 81 e.	32
Fort Worth, Tex†	13	12	9	6	n. 72 e.	3
Galveston, Tex	14	22	31	6	s. 72 e.	26
Palestine, Tex	19	29	23	2	s. 63 e.	23
San Antonio, Tex	23	19	28	6	n. 80 e.	22
Ohio Valley and Tennessee.						
Chattanooga, Tenn	21	21	14	19	w.	5
Knoxville, Tenn	23	15	18	23	n. 32 w.	9
Memphis, Tenn	22	23	19	15	s. 76 e.	4
Nashville, Tenn	26	18	10	24	n. 60 w.	16
Lexington, Ky †	11	10	7	11	n. 76 w.	4
Louisville, Ky	23	15	11	25	n. 60 w.	16
Evansville, Ind.†	9	8	8	12	n. 76 w.	4
Indianapolis, Ind	28	13	13	24	n. 36 w.	19
Cincinnati, Ohio	25	14	15	26	n. 45 w.	16
Columbus, Ohio	18	13	15	26	n. 66 w.	12
Pittsburg, Pa	26	14	11	24	n. 47 w.	18
Parkersburg, W. Va	24	13	10	28	n. 59 w.	21
Elkins, W. Va	23	14	6	30	n. 69 w.	26
Lower Lake Region.						
Buffalo, N. Y	17	11	16	29	n. 65 w.	14
Oswego, N. Y	21	18	14	22	n. 69 w.	8
Rochester, N. Y	21	12	12	33	n. 67 w.	23
Erie, Pa	20	12	15	28	n. 58 w.	15
Cleveland, Ohio	18	20	15	21	s. 72 w.	6
Sandusky, Ohio	19	13	16	30	n. 67 w.	15
Toledo, Ohio	20	12	15	27	n. 56 w.	14
Detroit, Mich	22	15	15	27	n. 60 w.	14
Upper Lake Region.						
Alpena, Mich	26	10	15	28	n. 39 w.	21
Escanaba, Mich	34	18	8	17	n. 29 w.	18
Grand Haven, Mich	24	13	22	19	n. 15 e.	11
Marquette, Mich	23	12	9	34	n. 66 w.	27
Port Huron, Mich	22	15	13	21	n. 49 w.	11
Sault Ste. Marie, Mich	14	13	20	28	n. 83 w.	8
Chicago, Ill	22	15	15	26	n. 58 w.	13
Milwaukee, Wis.	20	9	17	28	n. 45 w.	16
Green Bay, Wis	26	16	6	21	n. 56 w.	18
Duluth, Minn	36	8	15	22	n. 14 w.	29
North Dakota.						
Moorhead, Minn	29	13	18	21	n. 11 w.	16
Bismarck, N. Dak	32	8	19	19	n.	24
Williston, N. Dak	33	10	14	16	n. 5 w.	23

Stations.	Component direction from—				Resultant.	
	N.	S.	E.	W.	Direction from—	Duration.
Upper Mississippi Valley.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
St. Paul, Minn	26	13	15	25	n. 38 w.	16
La Crosse, Wis. †	13	10	6	8	n. 9 w.	13
Davenport, Iowa	19	13	14	31	n. 71 w.	18
Des Moines, Iowa	25	14	11	26	n. 54 w.	19
Dubuque, Iowa	18	15	19	26	n. 67 w.	8
Keokuk, Iowa	21	16	14	29	n. 72 w.	16
Cairo, Ill	24	19	12	15	n. 31 w.	6
Springfield, Ill	26	15	12	26	n. 52 w.	18
Hannibal, Mo †	7	9	8	14	s. 72 w.	6
St. Louis, Mo	22	14	13	22	n. 48 w.	12
Missouri Valley.						
Columbia, Mo.*	13	7	8	13	n. 40 w.	8
Kansas City, Mo	25	17	16	23	n. 41 w.	11
Springfield, Mo	20	23	15	21	s. 63 w.	7
Lincoln, Nebr	24	18	13	20	n. 49 w.	9
Omaha, Nebr	27	15	14	22	n. 34 w.	14
Sioux City, Iowa†	13	6	6	13	n. 45 w.	10
Pierre, S. Dak	28	13	19	19	n.	15
Huron, S. Dak	27	9	18	22	n. 13 w.	18
Yankton, S. Dak †	10	4	5	15	n. 59 w.	12
Northern Slope.						
Havre, Mont	24	7	28	21	n. 22 e.	18
Miles City, Mont	29	9	15	16	n. 3 w.	20
Helena, Mont	12	19	7	35	s. 76 w.	29
Kalispell, Mont	23	22	7	25	n. 87 w.	18
Rapid City, S. Dak	26	13	11	26	n. 49 w.	20
Cheyenne, Wyo	27	12	3	32	n. 62 w.	33
Lander, Wyo	16	23	24	19	s. 36 e.	9
North Platte, Nebr	21	14	13	30	n. 68 w.	18
Middle Slope.						
Denver, Colo	22	14	21	16	n. 32 e.	9
Pueblo, Colo	22	12	27	19	n. 39 e.	13
Concordia, Kans	23	23	10	20	w.	10
Dodge, Kans	24	21	17	14	n. 45 e.	4
Wichita, Kans	27	22	14	13	n. 11 e.	5
Oklahoma, Okla	23	22	15	9	n. 80 e.	6
Southern Slope.						
Abilene, Tex	22	21	27	8	n. 87 e.	19
Amarillo, Tex	15	30	15	13	s. 8 e.	15
Southern Plateau.						
El Paso, Tex	23	8	17	30	n. 41 w.	20
Santa Fe, N. Mex	20	21	22	19	s. 72 e.	3
Flagstaff, Ariz	21	13	17	26	n. 48 w.	12
Phenix, Ariz	11	5	26	27	n. 9 w.	6
Yuma, Ariz	14	17	19	26	s. 67 w.	8
Independence, Cal	25	14	9	31	n. 64 w.	25
Middle Plateau.						
Carson City, Nev	16	15	11	31	n. 87 w.	20
Winnemucca, Nev	18	17	23	19	n. 76 e.	4
Cedar City, Utah	16	27	17	13	s. 20 e.	12
Salt Lake City, Utah	23	22	17	18	n. 45 w.	1
Grand Junction, Colo	24	16	21	17	n. 27 e.	9
Northern Plateau.						
Baker City, Oreg	16	34	12	12	s.	18
Boise, Idaho	19	18	19	21	n. 63 w.	2
Pocatello, Idaho	7	30	15	18	s. 7 w.	23
Spokane, Wash	5	29	22	13	s. 21 e.	26
Walla Walla, Wash	7	36	9	18	s. 17 w.	30
North Pacific Coast Region.						
Neah, Wash	2	25	28	21	s. 17 e.	24
Port Crescent, Wash*	0	5	15	15	s.	5
Seattle, Wash	12	26	19	16	s. 12 e.	14
Tacoma, Wash	19	26	7	23	s. 66 w.	18
Astoria, Oreg	14	22	21	22	s. 7 w.	8
Portland, Oreg	18	28	18	15	s. 17 e.	10
Roseburg, Oreg	21	16	19	18	n. 11 e.	5
Middle Pacific Coast Region.						
Eureka, Cal	22	22	15	21	s.	6
Mount Tamalpais, Cal	20	13	8	34	n. 75 w.	27
Red Bluff, Cal	27	22	14	11	n. 31 e.	6
Sacramento, Cal	14	45	18	15	s. 6 e.	31
San Francisco, Cal	4	25	5	27	s. 46 w.	30
South Pacific Coast Region.						
Fresno, Cal	28	11	10	31	n. 51 w.	27
Los Angeles, Cal	13	15	6	38	s. 87 w.	32
San Diego, Cal	23	12	8	29	n. 62 w.	24
San Luis Obispo, Cal	21	13	4	26	n. 70 w.	23
West Indies.						
Basseterre, St. Kitts Island	16	3	50	2	n. 75 e.	50
Bridgetown, Barbados	28	3	49	0	n. 63 e.	55
Cienfuegos, Cuba‡						
Havana, Cuba	20	11	35	7	n. 72 e.	29
Kingston, Jamaica	36	11	23	6	n. 34 e.	30
Port of Spain, Trinidad	11	7	48	4	n. 85 e	44
Puerto Principe, Cuba	28	7	38	5	n. 57 e.	39
Roseau, Dominica, W. I	18	3	48	2	n. 71 e.	49
San Juan, Puerto Rico	6	21	46	3	s. 71 e.	46
Santiago de Cuba, Cuba	24	27	24	5	s. 81 e.	19
Santo Domingo, S. Domingo, W. I.	39	11	19	2	n. 31 e.	33
Willemstad, Curaçao	5	3	59	0	n. 88 e.	60

* From observations at 8 p. m. only. † From observations at 8 a. m. only. ‡ Record incomplete.

TABLE VII.—*Thunderstorms and auroras, March, 1900.*

States.	No. of stations.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total. No.	Total. Days.	
Alabama	52	T.							7		1					2				3	3	3			1	1				2			23	9	T.
		A.																															0	0	A.
Arizona	56	T.				1									1	10			11	11	2	15	5	2	1									59	10	T.
		A.																															0	0	A.
Arkansas	57	T.							1						1	4				1	10					2	8			1	3			31	9	T.
		A.																															0	0	A.
California	167	T.		1	2	7			1													2	1	11				2				1	28	9	T.
		A.																															0	0	A.
Colorado	81	T.					3																2	1	4	3	1	5	3				22	8	T.
		A.																															0	0	A.
Connecticut	21	T.																															0	0	T.
		A.																															0	0	A.
Delaware	5	T.																															0	0	T.
		A.																															0	0	A.
Dist. of Columbia	4	T.																															0	0	T.
		A.																															0	0	A.
Florida	47	T.	1							1	3						9	6			6	9			2	6	9	3	8	1	2			60	14	T.
		A.																															0	0	A.
Georgia	55	T.								1						1	9				5	5			1	1								23	7	T.
		A.																															0	0	A.
Idaho	34	T.			4																												4	1	T.
		A.																															0	0	A.
Illinois	92	T.								1					1					1	2						1		4	7	10			27	8	T.
		A.									1																						1	1	A.
Indiana	58	T.																												1	3			4	2	T.
		A.														1																		1	1	A.
Indian Territory	11	T.					1								1	2																		4	3	T.
		A.																																0	0	A.
Iowa	149	T.			1																					1		2	17	9	2		1	33	7	T.
		A.																																0	0	A.
Kansas	77	T.				1	7	2												2	5			1	4	6	20	6	4	1				59	12	T.
		A.										1	1																					2	2	A.
Kentucky	41	T.													6		1				7	2								1	6			23	6	T.
		A.																								1								1	1	A.
Louisiana	46	T.						1	3							2	3	1		2	8	1		3	3	7		2						36	12	T.
		A.																																0	0	A.
Maine	19	T.	1																															1	1	T.
		A.								2	1																							5	4	A.
Maryland	48	T.																																0	0	T.
		A.				1																												1	1	A.
Massachusetts	48	T.																																0	0	T.
		A.								1				3	1																			5	3	A.
Michigan	106	T.																										1						1	1	T.
		A.	1								2															1			1	1				6	5	A.
Minnesota	67	T.																																0	0	T.
		A.												1	1															1	1			3	3	A.
Mississippi	44	T.													1					5	7	3	1		1	4		1		1	2			26	10	T.
		A.																															0	0	A.
Missouri	95	T.					2	1							2						4				3	1	2	2	8	6	6			37	11	T.
		A.																																0	0	A.
Montana	40	T.																																0	0	T.
		A.					1																		1					1	1			4	4	A.
Nebraska	142	T.																	1						14	2	19	20	1					57	6	T.
		A.																																0	0	A.
Nevada	40	T.			1										1									1										3	3	T.
		A.																																0	0	A.
New Hampshire	19	T.																																0	0	T.
		A.			1					3				1																2	1			8	5	A.
New Jersey	51	T.																			1													1	1	T.
		A.																																0	0	A.
New Mexico	31	T.																		1	1	1	2	1		1								7	6	T.
		A.																																0	0	A.
New York	99	T.																																0	0	T.
		A.								1																1				3	1	1		7	5	A.
North Carolina	56	T.												1		1	6				4										6			18	5	T.
		A.																																0	0	A.
North Dakota	48	T.																																0	0	T.
		A.			1					1																					1			3	3	A.
Ohio	128	T.																																0	0	T.
		A.																																0	0	A.
Oklahoma	23	T.																							2	3								5	2	T.
		A.																																0	0	A.
Oregon	74	T.			1				1	1																2								5	4	T.
		A.																																0	0	A.
Pennsylvania	91	T.																																0	0	T.
		A.									1					1																		2	2	A.
Rhode Island	7	T.																																0	0	T.
		A.																																0	0	A.
South Carolina	46	T.	1													1	10				1	1								1	1	1		17	8	T.
		A.																																0	0	A.
South Dakota	56	T.																								1		1	6					8	3	T.
		A.												1	1																			2	2	A.
Tennessee	56	T.														3				1	11	5						1		2	5			28	7	T.
		A.																																0	0	A.
Texas	95	T.					1	2	1	1					1	1	1			2	2		2	12	11	8	7	7	3		5			67	17	T.
		A.																																0	0	A.
Utah	47	T.																							3			1						4	2	T.
		A.																																0	0	A.
Vermont	16	T.																																0	0	T.
		A.																																0	0	A.
Virginia	50	T.													1							1								1	2			5	4	T.
		A.																																0	0	A.
Washington	64	T.						1	3	1															2									7	4	T.
		A.												2															1					3	2	A.
West Virginia	43	T.																																0	0	T.
		A.																																0	0	A.
Wisconsin	60	T.																											1					1	1	T.
		A.																																1	1	A.
Wyoming	31	T.																								1	4							5	2	T.
		A.																																0	0	A.
Sums	2,893	T.	3	1	9	9	14	7	17	6	4	0	0	1	16	27	39	7	12	29	79	48	13	32	34	58	58	56	69	33	48	10	1	740		T.
		A.	1	0	2	1	1	0	0	8	5	1	1	8	3	2	0	0	0	0	0	0	0	0	0	4	0	0	0	2	10	5	1	55		A.

TABLE VIII.—*Average hourly sunshine (in percentages), March, 1900.*

Stations.	Instrument.	Percentages for each hour of local mean time ending with the respective hour.																Hours of sunshine.			
		A. M.								P. M.								Total.			
		5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	Actual.	Possible.	Percent of possible.	Personal estimate.
																		Hours.	*Hours.*		
Albany, N. Y	T.	.....	43	37	45	74	91	93	94	91	87	87	83	72	50	43	.....	280.0	370.9	75	54
Atlanta, Ga	T.	.....	30	31	40	55	62	73	76	79	69	72	62	51	39	28	.....	219.6	372.3	59	44
Atlantic City, N. J	T.	.....	50	57	56	61	71	82	80	80	74	73	67	57	41	46	.....	246.7	371.4	66	51
Baltimore, Md	T.	.....	0	10	26	46	56	56	71	75	65	55	48	37	27	24	.....	177.8	371.4	48	34
Binghamton, N. Y	T.	.....	0	13	25	33	43	52	56	65	61	60	43	42	34	24	.....	162.6	370.8	44	40
Bismarck, N. Dak	P.	.....	62	65	63	63	63	65	55	60	63	60	51	45	32	42	.....	309.9	370.3	57	48
Boise, Idaho	P.	.....	40	47	52	63	65	70	77	70	74	68	64	59	46	46	.....	233.8	370.7	63	52
Boston, Mass	T.	.....	38	52	53	57	67	74	72	75	70	69	64	56	57	57	.....	237.1	370.8	64	51
Buffalo, N. Y	T.	.....	36	35	39	44	56	69	72	74	69	61	55	42	29	28	.....	199.3	370.9	54	26
Cedar City, Utah	T.	.....	67	82	88	96	100	100	100	100	99	99	88	80	60	50	.....	336.8	371.4	91	66
Charleston, S. C	T.	.....	33	37	39	45	58	54	63	69	67	54	44	32	32	31	.....	184.1	372.3	49	49
Chattanooga, Tenn	T.	.....	30	26	32	39	54	61	65	62	60	55	47	37	26	21	.....	174.6	372.1	47	45
Cheyenne, Wyo	P.	.....	50	69	69	75	79	66	64	64	63	66	61	54	53	48	.....	240.3	371.2	65	55
Chicago, Ill	T.	.....	38	40	39	42	51	52	51	56	47	39	36	23	23	20	.....	153.1	370.8	41	38
Cincinnati, Ohio	T.	.....	8	46	45	50	53	52	57	59	58	55	51	35	32	26	.....	182.6	371.4	49	33
Cleveland, Ohio	T.	.....	54	38	35	36	43	52	55	53	55	51	44	32	29	33	.....	161.2	370.8	43	42
Columbia, Mo	T.	.....	42	51	59	69	74	80	83	83	84	80	75	65	56	35	.....	264.7	371.4	71	47
Columbus, Ohio	T.	.....	8	35	39	32	56	57	56	54	58	51	40	24	17	20	.....	164.5	371.2	44	38
Denver, Colo	P.	.....	58	57	66	80	81	85	84	83	77	77	69	54	45	20	.....	264.2	371.2	71	64
Des Moines, Iowa	T.	.....	15	30	30	34	52	56	69	71	69	72	60	48	36	39	.....	194.3	370.8	52	42
Detroit, Mich	T.	.....	38	30	34	46	52	62	65	63	56	47	42	25	19	24	.....	167.3	370.8	45	34
Dodge, Kans	P.	.....	25	48	53	63	62	67	64	71	68	71	69	66	49	26	.....	231.4	371.4	62	53
Dubuque, Iowa	T.	.....	23	37	36	47	55	59	61	66	60	54	45	36	38	35	.....	183.9	370.8	50	43
Eastport, Me	P.	.....	69	49	52	53	54	54	57	66	61	62	57	56	47	51	.....	206.7	370.7	56	39
Elkins, W. Va	T.	.....	0	6	9	17	33	44	50	51	55	52	30	19	13	15	.....	117.7	371.4	32	25
Erie, Pa	T.	.....	54	43	43	57	58	62	64	65	60	55	46	38	24	11	.....	189.2	370.8	51	35
Escanaba, Mich	T.	.....	44	30	27	31	39	57	56	59	55	42	27	13	10	12	.....	137.9	370.3	37	37
Eureka, Cal	P.	.....	33	25	27	34	40	47	52	44	44	36	29	26	18	17	.....	130.6	371.2	35	30
Fresno, Cal	T.	.....	82	55	54	68	86	91	93	98	96	97	92	83	64	78	.....	308.7	371.7	82	66
Galveston, Tex	P.	.....	0	8	20	43	46	49	51	62	60	60	59	60	30	4	.....	169.5	372.6	45	39
Grand Junction, Colo	P.	.....	83	83	82	84	92	94	90	89	90	88	75	74	75	80	.....	314.6	371.4	85	70
Harrisburg, Pa	T.	.....	17	33	38	41	55	68	75	68	67	68	58	46	48	48	.....	206.5	371.2	56	41
Helena, Mont	P.	.....	12	19	41	58	70	74	65	69	71	65	55	42	20	17	.....	202.0	370.3	55	37
Huron, S. Dak	T.	.....	40	58	59	65	74	78	85	83	82	79	68	57	49	40	.....	257.2	370.7	69	54
Indianapolis, Ind	T.	.....	25	42	41	45	47	48	49	46	45	44	36	32	29	24	.....	155.5	371.2	42	29
Jacksonville, Fla	T.	.....	0	20	25	45	57	67	74	64	63	59	54	43	35	28	.....	188.3	372.5	*51	53
Jupiter, Fla	T.	.....	17	23	36	64	78	87	84	85	85	75	64	56	33	22	.....	238.5	372.8	64	49
Kalispell, Mont	T.	.....	17	21	38	49	60	69	74	70	69	61	46	44	30	14	.....	194.6	370.1	53	52
Kansas City, Mo	P.	.....	33	57	54	65	70	72	71	65	71	71	68	55	56	54	.....	238.6	371.4	64	60
Key West, Fla	T.	.....	20	32	44	64	78	85	87	90	82	85	79	60	45	35	.....	258.5	373.5	69	50
Knoxville, Tenn	T.	.....	27	21	22	31	43	46	50	57	55	47	45	36	20	15	.....	146.9	371.9	39	41
Lexington, Ky	T.	.....	8	25	32	53	57	60	65	59	58	57	51	40	27	30	.....	181.4	371.4	49	45
Little Rock, Ark	T.	.....	40	39	41	47	54	61	66	74	70	64	50	38	26	19	.....	194.4	372.1	52	48
Los Angeles, Cal	P.	.....	80	37	44	53	59	61	65	67	72	75	73	68	60	51	.....	228.6	372.3	61	49
Louisville, Ky	T.	.....	8	18	21	49	59	59	64	66	68	67	57	39	29	30	.....	184.5	371.4	50	42
Macon, Ga	T.	.....	56	33	43	55	61	69	75	73	73	75	65	51	37	40	.....	220.2	372.3	59	55
Meridian, Miss	T.	.....	56	37	36	43	47	60	67	65	63	57	53	45	42	37	.....	191.0	372.1	51	46
Mount Tamalpais, Cal	P.	.....	100	78	71	72	77	76	72	73	77	74	74	66	62	76	.....	270.4	371.4	73	59
Nashville, Tenn	T.	.....	9	34	45	53	63	65	70	72	75	71	57	44	37	26	.....	211.5	371.9	57	37
New Haven, Conn	T.	.....	50	49	56	74	78	83	88	85	84	80	74	66	53	63	.....	269.5	371.2	73	73
New Orleans, La	T.	.....	50	35	35	51	58	60	67	67	65	68	56	45	28	21	.....	196.9	372.5	53	52
New York, N. Y	T.	.....	17	41	49	65	74	79	80	77	77	82	77	63	47	52	.....	251.1	371.2	68	47
Norfolk, Va	T.	.....	27	39	40	51	63	72	72	71	71	75	63	55	43	39	.....	221.2	371.7	60	51
Northfield, Vt	P.	.....	53	41	46	49	53	55	56	55	58	50	53	51	40	50	.....	188.5	370.7	51	44
Oklahoma, Okla	T.	.....	60	49	48	55	70	76	79	80	76	75	70	62	51	45	.....	245.3	372.1	66	49
Omaha, Nebr	T.	.....	42	51	52	69	76	78	79	77	76	72	64	49	41	37	.....	242.2	371.2	65	46
Parkersburg, W. Va	T.	.....	8	19	16	19	35	45	50	50	41	39	29	23	17	20	.....	118.5	371.4	32	32
Phenix, Ariz	P.	.....	89	70	73	83	90	87	81	83	81	84	78	74	58	64	.....	292.3	372.3	79	63
Philadelphia, Pa	T.	.....	50	54	45	50	64	68	72	75	73	60	51	40	39	37	.....	212.5	371.2	57	36
Pittsburg, Pa	T.	.....	42	29	26	33	39	44	48	41	44	37	29	22	19	20	.....	127.5	371.2	34	42
Pocatello, Idaho	T.	.....	36	53	52	64	73	78	91	89	87	78	68	53	53	64	.....	260.2	370.9	70	59
Portland, Me	T.	.....	53	40	55	62	66	70	73	76	82	76	73	63	47	44	.....	242.7	370.7	65	61
Portland, Oreg	T.	.....	31	22	19	28	42	54	68	73	68	64	54	42	25	14	.....	172.9	370.3	47	43
Pueblo, Colo	T.	.....	67	63	61	78	82	89	99	98	96	94	89	69	42	41	.....	296.0	371.4	80	57
Raleigh, N. C	T.	.....	45	36	44	61	68	77	79	80	78	72	57	53	37	38	.....	230.2	371.9	62	49
Rochester, N. Y	T.	.....	29	30	30	40	55	61	66	69	62	58	45	38	36	51	.....	183.3	370.9	49	42
St. Louis, Mo	T.	.....	42	34	42	68	83	84	89	88	86	80	73	72	58	28	.....	265.3	371.4	71	50
St. Paul, Minn	P.	.....	44	43	48	57	65	59	55	64	60	61	57	53	28	24	.....	200.0	370.7	54	47
Salt Lake City, Utah	T.	.....	75	80	79	81	84	89	90	94	93	90	83	71	68	91	.....	311.2	371.2	84	80
San Diego, Cal	P.	.....	44	42	48	52	61	66	71	79	84	81	75	64	61	68	.....	244.2	372.3	66	68
San Francisco, Cal	T.	.....	17	21	22	45	69	69	79	82	87	81	73	56	43	57	.....	226.5	371.4	61	55
Santa Fe, N. Mex	P.	.....	91	69	75	80	81	86	87	87	87	83	80	78	70	74	.....	298.6	371.9	80	67
Sault Ste. Marie, Mich	T.	.....	69	26	28	50	67	76	87	93	83	77	65	55	42	55	.....	233.7	370.3	63	56
Savannah, Ga	T.	.....	56	44	43	49	51	59	65	66	64	57	50	41	39	33	.....	194.1	372.1	52	48
Seattle, Wash	T.	.....	0	17	23	34	46	52	66	67	62	39	53	45	32	8	.....	170.6	370.1	46	41
Spokane, Wash	T.	.....	22	35	33	45	51	53	51	54	53	51	45	46	39	45	.....	171.7	370.1	46	33
Tacoma, Wash	T.	.....	12	12	14	22	35	40	37	46	48	47	44	36	18	10	.....	123.3	370.3	33	29
Tampa, Fla	T.	.....	0	29	34	58	65	65	73	70	71	73	54	37	29	24	.....	203.7	372.8	55	41
Toledo, Ohio	T.	.....	38	41	45	57	68	72	78	78	74	76	57	46	34	30	.....	224.7	370.8	61	44
Topeka, Kans	T.	.....	33	47	48	57	70	72	74	73	69	71	68	49	48	41	.....	230.7	371.4	62	54
Vicksburg, Miss	T.	.....	33	34	40	49	57	63	68	75	69	68	60	52	48	46	.....	212.3	372.1	57	38
Washington, D. C	P.	.....	0	26	30	42	48	55	58	58	58	51	50	43	36	30	.....	171.5	371.4	46	40
Wilmington, N. C	T.	.....	20	32	40	47	58	65	77	78	70	55	55	41	23	13	.....	197.9	372.3	53	48
Yankton, S. Dak	T.	.....	50	37	49	63	68	71	71	72	72	74	63	49	32	28	.....	222.6	370.9	60	50
Basseterre, St. Kitts	T.	.....	33	44	65	80	89	88	84	94	94	94	90	83	63	47	.....	300.4	374.1	80	58
Bridgetown, Barbados	T.	.....	0	35	65	73	78	82	87	82	79	70	61	52	35	9	.....	246.7	374.3	66	36
Cienfuegos, Cuba*	T.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Havana, Cuba	T.	.....	20	50	49	50	61	64	68	53	53	50	46	32	26	23	.....	184.3	373.5	49	42
Kingston, Jamaica, W. I	T.	.....	32	44	62	79	83	84	79	77	82	75	61	58	38	38	.....	254.8	373.9	68	48
Port of Spain, Trinidad, W. I	T.	.....	42	47	43	61	59	66	63	67	53	53	45	46	53	55	.....	205.5	374.5	55	30
Puerto Principe, Cuba	T.	.....	0	41	53	68	78	86	81	78	71	66	54	35	31	23	.....	229.9	373.9	61	51
Roseau, Dominica, W. I	T.	.....	0	6	21	52	64	70	85	85	87	77	74	71	50	47	.....	232.7	374.2	62	54
San Juan, Puerto Rico	T.	.....	33	22	36	59	71	81	82	90	84	82	80	62	32	17	.....	242.2	373.9	65	63
Santiago de Cuba, Cuba*	T.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	66
Santo Domingo, Santo Domingo	T.	.....	67	62	58	58	76	68	74	73	72	66	64	46	42	45	.....	235.5	373.9	63	62
Willemstad, Curaçao	T.	.....	5	20	23	40	60	68	71	78	68	64	58	43	20	20	.....	189.5	374.2	51	46

*Record incomplete.

TABLE IX.—*Accumulated amounts of precipitation for each 5 minutes, for storms in which the rate of fall equaled or exceeded 0.25 in any 5 minutes, or 0.75 in 1 hour during March, 1900, at all stations furnished with self-registering gages.*

Stations.	Date.	Total duration.		Total amt of precipitation.	Excessive rate.		Amount before excessive began.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
	1	2	3	4	5	6	7														
Albany, N. Y.	†			2.14														*			
Atlanta, Ga.	7-8			2.47														0.63			
Atlantic City, N. J.	29-30			0.69														0.07			
Baltimore, Md.	15-16			0.91														*			
Binghamton, N. Y.	1			1.94														0.23			
Bismarck, N. Dak.	27-28			1.42														*			
Boise, Idaho	3-4			0.30														0.10			
Boston, Mass.	15-16			2.21														0.35			
Buffalo, N. Y	†			1.50														*			
Cairo, Ill.	24-25			0.57														0.16			
Charleston, S. C.	25			1.07														0.29			
Chicago, Ill.	5-6			0.74														*			
Cincinnati, Ohio	5-6			0.60														0.18			
Cleveland, Ohio	†			0.96														0.13			
Columbia, Mo.	5			1.14														0.15			
Columbus, Ohio	5-6			0.71														0.11			
Denver, Colo.	27			0.27														*			
Des Moines, Iowa	27-28			1.94														0.34			
Detroit, Mich.	5-6			1.43														*			
Dodge, Kans	14-15			0.34														*			
Duluth, Minn.	5-6			0.33														*			
Eastport, Me.	16			0.94														0.20			
Elkins, W. Va.	29			0.71														0.20			
Erie, Pa.	5-6			0.66														*			
Escanaba, Mich.	5-6			0.30														*			
Evansville, Ind	5-6			0.45														0.20			
Fort Worth, Tex.	22-23			0.43														0.13			
Fresno, Cal.	3-4			0.57														0.11			
Galveston, Tex.	26	D. N.	4.30 p. m.	2.21	12.00 m.	1.00 p. m.	0.62	0.16	0.24	0.28	0.31	0.46	0.57	0.64	0.72	0.87	1.01	1.31	1.36		
Grand Junction, Colo.	27			0.10														0.04			
Harrisburg, Pa	†			1.33														0.32			
Hatteras, N. C.	8-9			1.27														0.38			
Huron, S. Dak.	27-28			0.87														*			
Indianapolis, Ind.	5-6			1.07														0.23			
Jacksonville, Fla.	15-16	5.20 p. m.	D. N.	2.66	9.25 p. m.	11.25 p. m.	0.08	0.14	0.26	0.36	0.41	0.45	0.55	0.61	0.77	0.82	0.84	0.90	1.05	1.32	1.73
Jupiter, Fla.	26-27	2.27 p. m.	2.00 a. m.	3.00	2.50 p. m.	3.25 p. m.	T.	0.15	0.33	0.46	0.59	0.68	0.79	0.84	0.85	0.87	0.91	0.95			
					4.25 p. m.	5.35 p. m.	1.16	0.12	0.24	0.54	0.60	0.65	0.67	0.70	0.70	0.77	0.89	0.99	1.32		
Kalispell, Mont	3			0.35														*			
Kansas City, Mo.	25			0.38														0.37			
Key West, Fla.	16			0.74														0.65			
Knoxville, Tenn	20			0.31														0.30			
Lexington, Ky.	25-26			0.47														*			
Lincoln, Nebr.	26-27			0.20												0.18					
Little Rock, Ark.	24-25			0.40														0.10			
Los Angeles, Cal.	4			0.90														0.36			
Louisville, Ky.	5-6			0.44														0.13			
Macon, Ga.	15	1.46 p. m.	6.42 p. m.	1.19	3.05 p. m.	4.05 p. m.	0.13	0.05	0.13	0.23	0.33	0.40	0.44	0.51	0.56	0.63	0.71	0.83			
Memphis, Tenn.	19			1.32														0.66			
Meridian, Miss.	78			1.08														0.43			
Milwaukee, Wis.	4-6			1.20														*			
Montgomery, Ala	19	7.25 a. m.	11.40 a. m.	1.28	8.15 a. m.	8.50 a. m.	0.19	0.10	0.28	0.43	0.54	0.59	0.63	0.67	0.70	0.71					
Nantucket, Mass.	19-20			1.00														0.24			
Nashville, Tenn.	6			0.38														0.19			
New Orleans, La.	24	9.25 a. m.	3.25 p. m.	1.30	1.55 p. m.	2.10 p. m.	0.44	0.07	0.35	0.62	0.65										
New York, N. Y.	15-16			1.60														0.24			
Norfolk, Va.	1			0.51														0.47			
Northfield, Vt.	†			2.20														*			
Oklahoma, Okla.	17-18			0.15														0.10			
Omaha, Nebr.	27-28			0.87														0.30			
Parkersburg, W. Va.	5-6			0.22														0.11			
Philadelphia, Pa.	15-16			1.60														*			
Pittsburg, Pa.	†			0.67														*			
Pocatello, Idaho	8			0.24														0.11			
Portland, Me.	†			3.44														0.56			
Portland, Oreg.	6-8			1.26														0.20			
Raleigh, N. C.	†			1.08														0.47			
Richmond, Va.	15-16			0.88														*			
Rochester, N. Y.	‡			3.69														*			
St. Louis, Mo.	5-6			0.91														*			
St. Paul, Minn.	5-6			0.73														0.30			
Salt Lake City, Utah	4-5			0.32														*			
San Diego, Cal.	4			0.48														0.38			
San Francisco, Cal.	3			0.38														0.23			
Savannah, Ga.	24-25			1.21														*			
Seattle, Wash.	9			0.98														0.23			
Spokane, Wash.	2-4			0.71														*			
Tampa, Fla.	16	12.30 a. m.	4.40 a. m.	1.16	1.35 a. m.	2.25 a. m.	0.10	0.10	0.20	0.31	0.38	0.47	0.57	0.62	0.67	0.72	0.75	0.80			
Do	20	6.30 a. m.	11.30 a. m.	1.93	8.00 a. m.	8.20 a. m.	0.19	0.35	0.80	1.40	1.50										
Vicksburg, Miss.	18-19			1.34														0.50			
Washington, D. C.	15			1.42														*			
Wilmington, N. C.	23-24			0.68														0.20			
Yankton, S. Dak	27-28			1.19														0.27			
Basseterre, St. Kitts.	12-13			0.63														0.45			
Bridgetown, Barbados	19			0.31														0.10			
Cienfuegos, Cuba *																					
Havana, Cuba	16	11.37 a. m.	4.15 p. m.	1.76	12.42 p. m.	1.15 p. m.	0.76	0.16	0.32	0.50	0.65	0.70	0.77								
Do	27	1.25 p. m.	3.50 p. m.	1.41	2.03 p. m.	3.30 p. m.	0.02	0.08	0.14	0.20	0.33	0.42	0.49	0.55	0.60	0.65	0.69	0.84	1.21	1.39	
Kingston, Jamaica	6			0.40								0.24									
Port of Spain, Trin.	13			0.60														0.50			
Puerto Principe, Cuba	29	4.25 p. m.	8.05 p. m.	4.00	4.30 p. m.	5.25 p. m.	T.	0.24	0.59	0.85	1.26	1.57	1.88	2.11	2.48	2.94	3.19	3.31	3.56	3.69	
Roseau, Dom., W. I.	13	9.41 a. m.	12.20 p. m.	1.35	9.55 a. m.	10.25 a. m.	0.01	0.10	0.37	0.56	0.86	1.01	1.07	1.09	1.12	1.21	1.25	1.31			
San Juan, Puerto Rico.	4			0.43														0.42			
Santiago de Cuba	17	D. N.	7.33 a. m.	1.02	5.15 a. m.	5.45 a. m.	0.13	0.06	0.15	0.29	0.41	0.51	0.58	0.62	0.64	0.65					
Santo Domingo, S. D.	5	1.20 p. m.	1.55 p. m.	0.65	1.35 p. m.	1.50 p. m.	0.04	0.26	0.47	0.61											
Willemstad, Curaçao.	13			0.15								0.15									

* Self-register not working. ‡ February 28 to March 2. † February 28 to March 1.

TABLE X.—*Data furnished by the Canadian Meteorological Service, March*, 1900.

Stations.	Pressure.			Temperature.				Precipitation.		
	Mean not reduced.	Mean reduced.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Depth of snow.
	Ins.	*Ins.*	*Ins.*	°	°	°	°	*Ins.*	*Ins.*	*Ins.*
St. Johns, N. F.	29.75	29.90	+.06	30.1	+ 2.4	36.6	23.7	7.19	.....	16.5
Sydney, C. B. I.	29.85	29.89	+.02	28.4	+ 2.2	36.3	20.5	9.87	+4.62	27.5
Halifax, N. S.	29.78	29.90	+.01	30.6	+ 1.6	38.3	22.8	6.56	+0.70	12.3
Grand Manan, N. B.	29.84	29.89	−.01	29.7	− 0.1	37.7	21.6	5.48	+1.33	10.1
Yarmouth, N. S.	29.84	29.92	+.04	31.8	+ 1.0	38.5	25.0	5.69	+0.83	13.4
Charlottet'n, P. E. I.	29.83	29.87	−.01	26.7	+ 1.3	34.2	19.2	3.90	+0.49	15.6
Chatham, N. B.	29.84	29.86	−.04	21.2	− 1.8	32.3	10.2	2.71	−1.53	18.0
Father Point, Que.	29.84	29.87	−.04	18.0	− 2.3	27.7	8.3	3.12	+0.66	27.7
Quebec, Que.	29.58	29.92	−.03	17.3	− 3.9	25.9	8.7	3.73	−0.18	36.3
Montreal, Que.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bissett, Ont.	29.38	30.04	+.06	13.3	− 6.0	29.0	− 2.3	1.38	−0.91	12.0
Ottawa, Ont.	29.61	29.95	−.03	18.6	− 2.9	28.3	8.9	3.70	.....	35.0
Kingston, Ont.	29.67	30.01	+.01	21.2	− 4.4	30.0	12.4	2.37	−0.69	21.1
Toronto, Ont.	29.64	30.05	+.02	24.7	− 3.6	32.0	15.4	3.65	+1.05	20.3
White River, Ont.	28.64	30.10	+.02	6.2	− 6.0	24.7	−12.4	1.18	+0.03	11.8
Port Stanley, Ont.	29.37	30.05	+.03	28.9	− 3.3	32.4	15.5	4.77	+1.82	44.3
Saugeen, Ont.	29.29	30.05	+.03	21.0	− 3.7	30.2	11.8	1.73	−0.82	10.5
Parry Sound, Ont.	29.28	30.02	.00	18.2	− 2.9	30.7	5.6	1.96	−0.66	13.4
Port Arthur, Ont.	29.31	30.05	.00	16.6	− 0.2	28.2	5.0	0.29	−0.88	2.9
Winnipeg, Man.	29.25	30.14	+.01	12.3	0.0	23.6	1.0	0.68	−0.34	6.8
Minnedosa, Man.	28.23	30.16	+.06	12.4	− 0.1	22.8	1.9	0.67	+0.01	6.7
Qu'Appelle, Assin.	27.76	30.16	+.08	12.4	− 2.5	22.8	2.0	1.23	+0.59	12.3
Medicine Hat, Assin.	27.73	30.10	+.06	28.7	+ 1.2	40.2	17.2	1.05	+0.44	8.0
Swift Current, Assin.	27.47	30.16	+.07	23.1	+ 1.1	33.8	12.4	0.57	−0.25	5.7
Calgary, Alberta	26.40	30.03	−.02	28.2	+ 2.0	39.7	16.7	0.40	−0.36	4.0
Banff, Alberta	25.30	30.06	.....	27.8	.....	38.0	17.5	2.68	.....	16.9
Edmonton, Alberta	27.68	30.09	+.09	19 9	− 4.3	30.7	9.1	1.93	+1.28	19.3
Prince Albert, Sask.	28.53	30.17	.....	11.4	− 0.6	21.2	1.5	0.47	.....	4.7
Battleford, Sask.	28.38	30.25	.....	10.0	− 3.1	20.7	− 0.7	0.36	.....	3.6
Kamloops, B. C.	28.74	30.04	.....	42.2	.....	50.9	33.5	0.27	.....	1.0
Victoria, B. C.	29.87	29.96	.....	48.3	.....	53.6	43.1	3.63	.....	0.0
Barkerville, N. W. T.	25.54	29.92	.....	31.3	.....	43.4	19.3	0.76	.....	6.0
Hamilton, Bermuda.	29.89	30.05	−.04	62.4	+ 0.2	67.9	56.9	8.08	.....	0.0

TABLE XI.—*Heights of rivers referred to zeros of gages, March*, 1900.

Stations.	Distance to mouth of river.	Danger line on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Mississippi River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
St. Paul, Minn[10]	1,954	14	.....	.....	.....	.....	.....	.....
Reeds Landing, Minn	1,884	12	1.0	31	— 0.9	3-9	—0.5	1 9
La Crosse, Wis.[1]	1,819	12	6.1	28,29	3.0	11	4.9	3.1
North McGregor, Iowa.[2]	1,759	18	.....	.....	.....	.....	.....	.....
Dubuque, Iowa.[2]	1,699	15	.....	.....	.....	.....	.....	.....
Leclaire, Iowa.[2]	1,609	10	.....	.....	.....	.....	.....	.....
Davenport, Iowa[3]	1,593	15	.....	.....	.....	.....	.....	.....
Muscatine, Iowa	1,562	16	11.1	15	3.2	7	6.5	7.9
Galland, Iowa[1]	1,472	8	5.5	14-16	2.4	11	4.2	3.1
Keokuk, Iowa[4]	1,463	15	16.0	12	4.8	31	7.7	11.2
Hannibal, Mo	1,402	13	13.0	15	5.5	1	8.8	7.5
Grafton, Ill	1,306	23	17.3	16	4.8	4	12.2	12.5
St. Louis, Mo	1,264	30	23.4	16	5.5	4	16 3	17.9
Chester, Ill	1,189	30	19.4	16	4.5	4	13.2	14.9
Memphis, Tenn	843	34	29.5	19,20	18.0	7,8	24.1	11.5
Helena, Ark	767	42	38.1	21,22	25.8	9	32.6	12.3
Arkansas City, Ark	635	42	39.3	25	28.7	10	34.5	10.6
Greenville, Miss	595	42	33.7	25	24.3	10,11	29.4	9.4
Vicksburg, Miss	474	45	38.0	27	27.9	12	32.9	10.1
New Orleans, La	108	16	14.0	30	9.7	1	11.5	4.3
Missouri River.								
Bismarck, N. Dak	1,309	14	10.8	28-30	1.8	4	6.6	9.0
Pierre, S. Dak[4]	1,114	14	6.8	21	2.0	15	4.7	4.8
Sioux City, Iowa[9]	784	19	.....	.....	.....	.....	.....	.....
Omaha, Nebr[6]	669	18	8.7	26	5.0	22,23	6.7	3.7
Plattsmouth, Nebr	641	17	7.9	11	3.4	18	5 0	4.5
St. Joseph, Mo	481	10	5.1	11	1.2	23	3.1	3.9
Kansas City, Mo	388	21	15.5	8	6.7	26	9.5	8.8
Boonville, Mo	199	20	15.8	9	6.2	28,29	10.9	9.6
Hermann, Mo	103	24	16.2	12,13	4.9	4	10.2	11.3
Des Moines River.								
Des Moines, Iowa[1]	150	19	6.9	13	3.8	{20-24, 26,27}	4.5	3.1
Illinois River.								
Peoria, Ill	135	14	19.9	16,17	11.3	8	15.4	8.6
Osage River.								
Bagnell, Mo	70	28	17.0	7	1.9	31	6.4	15.1
Gasconade River.								
Arlington, Mo	58	16	6.2	8	— 0.9	27-31	1.2	7.1
Youghiogheny River.								
Confluence, Pa	59	10	3.8	7	1.6	14,15,29	2.4	2.2
West Newton, Pa	15	23	9.0	1	1.7	18	3.6	7.3
Allegheny River.								
Warren, Pa	177	14	5.5	25,26	2.0	4-6,19,20	3.3	3.5
Oil City, Pa	123	13	6.3	3,5	2.7	16,19	4.2	3.6
Parker, Pa	73	20	10.0	7	2.2	19	4.8	7.8
Monongahela River.								
Weston, W. Va.	161	18	9.0	1	0.0	{10-18, 24-29}	1.0	9.0
Fairmont, W. Va.	119	25	15.2	2	1.3	18	3.7	13.9
Greensboro, Pa.	81	18	16.5	2	8.0	16-18	10.2	8.5
Lock No. 4, Pa.	40	28	21.0	2	7.4	18	11.4	13.6
Conemaugh River.								
Johnstown, Pa.	64	7	4.2	7	2.2	1	3.1	2.0
Red Bank Creek.								
Brookville, Pa	35	8	3.5	7	2.0	{1, 14-18, 25-31}	2.4	1.5
Beaver River.								
Ellwood Junction, Pa[7]	10	14	9.6	7	4.2	24-31	5.1	5.4
Great Kanawha River.								
Charleston, W. Va	61	30	20.7	21	5.8	18	9.5	14.9
New River.								
Hinton, W. Va	93	14	9.5	2,21	3.1	18	4.8	6.4
Cheat River.								
Rowlesburg, W. Va.	36	14	7.0	7	3.8	1	4.8	3.2
Ohio River.								
Pittsburg, Pa	966	22	15.0	2	4.3	19	9.2	10 7
Davis Island Dam, Pa	960	25	14.5	2	6.2	18	9.9	8.3
Wheeling, W. Va.	875	36	24.9	8	7.7	19	13 9	17.2
Parkersburg, W. Va.	785	36	25.2	9	9.8	19	15 6	15.4
Point Pleasant, W. Va	703	39	29.4	4	11.8	18,19	20 6	17.6
Huntington, W. Va	660	50	32.8	4	16.0	19	25.0	16.8
Catlettsburg, Ky	651	50	33.7	4	15.6	19	25.5	18.1
Portsmouth, Ohio	612	50	34.1	10	16.4	19	26.4	17.7
Cincinnati, Ohio	499	50	36.8	7	19.4	20	28.9	17.4
Madison, Ind	413	46	31.7	7	17.5	20	25.0	14.2
Louisville, Ky	367	28	13.2	8	8.6	20,21	10.7	4.6
Evansville, Ind	184	35	29.7	10	17.4	22	24.2	12.3
Paducah, Ky	47	40	30.9	15,16	21.8	6	26.1	9.1
Cairo, Ill	1,073	45	39.2	17	25.8	5,6	32.7	13.4
Muskingum River.								
Zanesville, Ohio	70	20	18.8	7	8.4	18	11.7	10.4
Scioto River.								
Columbus, Ohio[8]	110	17	10.0	7	3.0	16,29	4.7	7.0
Miami River.								
Dayton, Ohio	69	18	8.6	7	1.7	24,25,29	3.0	6.9
Wabash River.								
Mount Carmel, Ill.	50	15	19.0	14,15	5.0	3	12.3	14.0
Licking River.								
Falmouth, Ky	30	25	8.6	22	2.4	17-19	4.3	6.2
Clinch River.								
Speers Ferry, Va	156	20	14.0	21	0.8	18	3.2	13.2
Clinton, Tenn	46	25	20.5	22	7.0	18,19	10.3	13.5
Tennessee River.								
Knoxville, Tenn	614	29	13.2	22	3.9	1	6.6	9.3
Kingston, Tenn	534	25	12.3	23	4.8	16,17	7.0	7.5
Chattanooga, Tenn	430	33	17.7	23	7.5	18,19	11.3	10.2
Bridgeport, Ala	390	24	13.8	24	5.7	19	9.0	8.1
Florence, Ala	220	16	12.2	12,26	6.5	19	9.6	5.7
Riverton, Ala	190	25	17.8	13	8.7	19	13.6	9.1

Stations.	Distance to mouth of river.	Danger line on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Tennessee River—Con'd.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
Johnsonville, Tenn	94	21	18.7	28	10.9	20	14.9	7.8
Cumberland River.								
Burnside, Ky	434	50	21.0	21	5.0	16-18	9.5	16.0
Carthage, Tenn	357	40	17.7	23	5.6	18	11.2	12.1
Nashville, Tenn	175	40	21.2	25	8.9	19	15.5	12.3
Arkansas River.								
Wichita, Kans	726	10	3.4	6	2.1	31	2.5	1.3
Webbers Falls, Ind. T	413	23	8.8	10	2.2	1	4.2	6.6
Fort Smith, Ark	351	22	9.3	10	2.8	1	5.5	6.5
Dardanelle, Ark	256	21	9.5	12	3.3	31	6.0	6.2
Little Rock, Ark	176	23	11.0	2	5.3	31	8.4	5.7
White River.								
Newport, Ark	150	26	18.5	3	5.9	31	12.0	12.6
Yazoo River.								
Yazoo City, Miss	80	25	20.5	25-28	15.0	1-3	17.7	5.5
Red River.								
Arthur City, Tex	688	27	10.0	17	5.1	14-16,23	6.0	4.9
Fulton, Ark	565	28	12.5	20	6.5	17	8.6	6.0
Shreveport, La	449	29	8.6	25	5.0	19	6.5	3.6
Alexandria, La	139	33	15.0	27	8.0	7	9.5	9.0
Ouachita River.								
Camden, Ark	340	39	26.2	4	9.1	17	14.5	17.1
Monroe, La	100	40	23.5	29-31	13.0	1	20.1	10.5
Atchafalaya River.								
Melville, La	100	31	30.5	28-31	26.1	1	28.0	4.4
Susquehanna River.								
Wilkesbarre, Pa	178	14	16.0	2	2.2	16	6.3	13.8
Harrisburg, Pa	70	17	13.4	2	3.0	19,20	5.8	10.4
W. Br. of Susquehanna.								
Williamsport, Pa	35	20	11.0	2	2.5	19	5.3	6.5
Juniata River.								
Huntingdon, Pa.[8]	80	24	6.0	2	3.8	19	4.4	2.2
Potomac River.								
Harpers Ferry, W. Va	170	16	8.5	22	2.8	16-19	4.0	5.7
James River.								
Lynchburg, Va	257	18	8.7	21	1.8	19	3.5	6.9
Richmond, Va.	110	12	11.4	2	— 0.6	15	1.5	12.0
Roanoke River.								
Weldon, N. C.	90	40	33.0	4	10.3	16	14.6	22.7
Cape Fear River.								
Fayetteville, N. C.	100	38	33.7	3	7.0	25	14.5	26.7
Lumber River.								
Fairbluff, N. C.	10	6	5.8	4-7	4.6	23,24	5.2	1.2
Edisto River.								
Edisto, S. C	75	6	5.2	3-7	4.7	17-26	4.9	0.5
Pedee River.								
Cheraw, S. C.	145	27	29.7	3	5.3	31	11.7	24.4
Black River.								
Kingstree, S. C	60	12	10.2	6	7.4	23-27	8.6	2.8
Lynch Creek.								
Effingham, S. C.	35	12	12.7	8	7.6	21	9.6	5.1
Santee River.								
St. Stephens, S. C.	50	12	10 5	11	8.4	23	9.0	2.1
Congaree River.								
Columbia, S. C.	37	15	12.7	2	1.2	15	4.0	11.5
Wateree River.								
Camden, S. C.	45	24	27.5	3	8.4	15	14.4	19.1
Waccamaw River.								
Conway, S. C.	40	7	6.7	2-4	3.6	26	5.6	3.1
Savannah River.								
Calhoun Falls, S. C.	347	.....	6.5	2	3.3	15	4.3	3.2
Augusta, Ga	208	32	22.9	2	10.0	15	14.0	12.9
Broad River.								
Carlton, Ga	30	.....	6.8	9	3.0	6,7,15	4.1	3.8
Flint River.								
Albany, Ga	80	20	16.9	27	8.9	8,13,14	11.1	8.0
Chattahoochee River.								
Westpoint, Ga	239	20	8.1	9	4.1	18	5.3	4.0
Ocmulgee River.								
Macon, Ga	125	20	10.9	27	5.2	19	7.3	5.7
Oconee River.								
Dublin, Ga	60	30	11.7	5	5.8	9	8.8	5.9
Coosa River.								
Rome, Ga	225	30	17.5	21	3.8	6	8.0	13.7
Gadsden, Ala	144	18	18.2	22	5.5	15	10.7	12.7
Alabama River.								
Montgomery, Ala	265	35	28.1	26	10.1	7,8	17.9	18.0
Selma, Ala	212	35	33.3	27	13.9	8,18	21.6	19.4
Tombigbee River.								
Columbus, Miss.	303	33	19.2	23	3.1	30	9 1	16.1
Demopolis, Ala.	155	35	47.6	29	22.3	9	33 9	25.3
Black Warrior River.								
Tuscaloosa, Ala	129	43	51.0	21	15.3	7	28.7	35.7
Columbia River.								
Umatilla, Oreg	270	25	9.0	28,29	2 2	1	6.5	6.8
The Dalles, Oreg	166	40	14.5	29	7.2	3	11 3	7.3
Willamette River.								
Albany, Oreg	99	20	11.5	31	5.2	20	7.2	6.3
Portland, Oreg	10	15	10.6	31	6.6	4	8.2	4.0
Sacramento River.								
Red Bluff, Cal.	241	23	23.2	8	2.9	1,2	6.3	20.3
Sacramento, Cal.	70	29	23.5	20	17.4	3	21.5	6.1

[1] Frozen for 10 days. [2] Frozen for 23 days. [3] Frozen for 19 days. [4] Frozen for 11 days. [5] Frozen for 25 days. [6] Frozen for 12 days. [7] Frozen for 6 days. [8] Frozen for 1 day. [9] Frozen for 24 days. [10] Frozen during entire month.

Chart I. Tracks of Centers of High Areas. March, 1900.

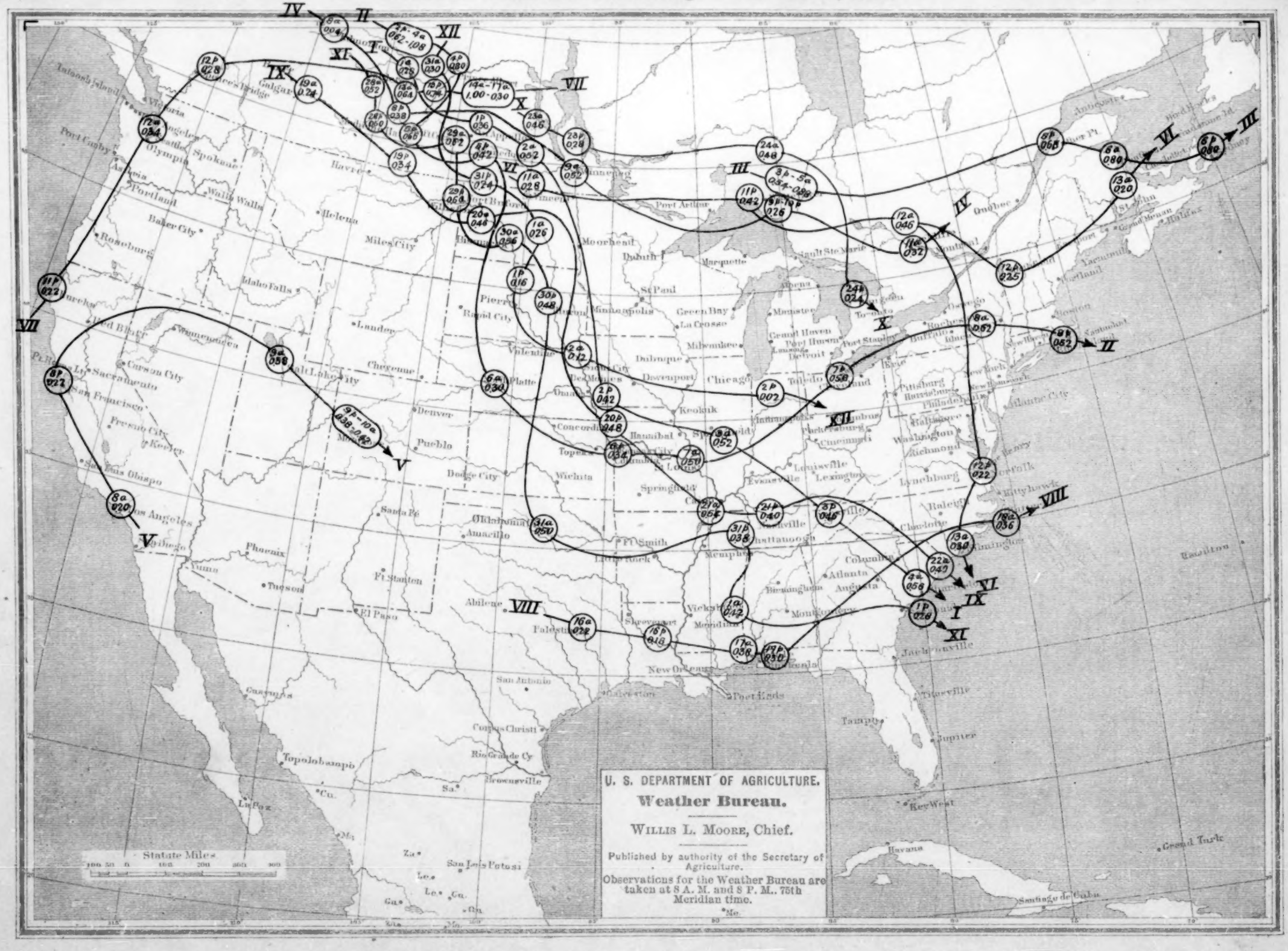

Chart II. Tracks of Centers of Low Areas. March, 1900.

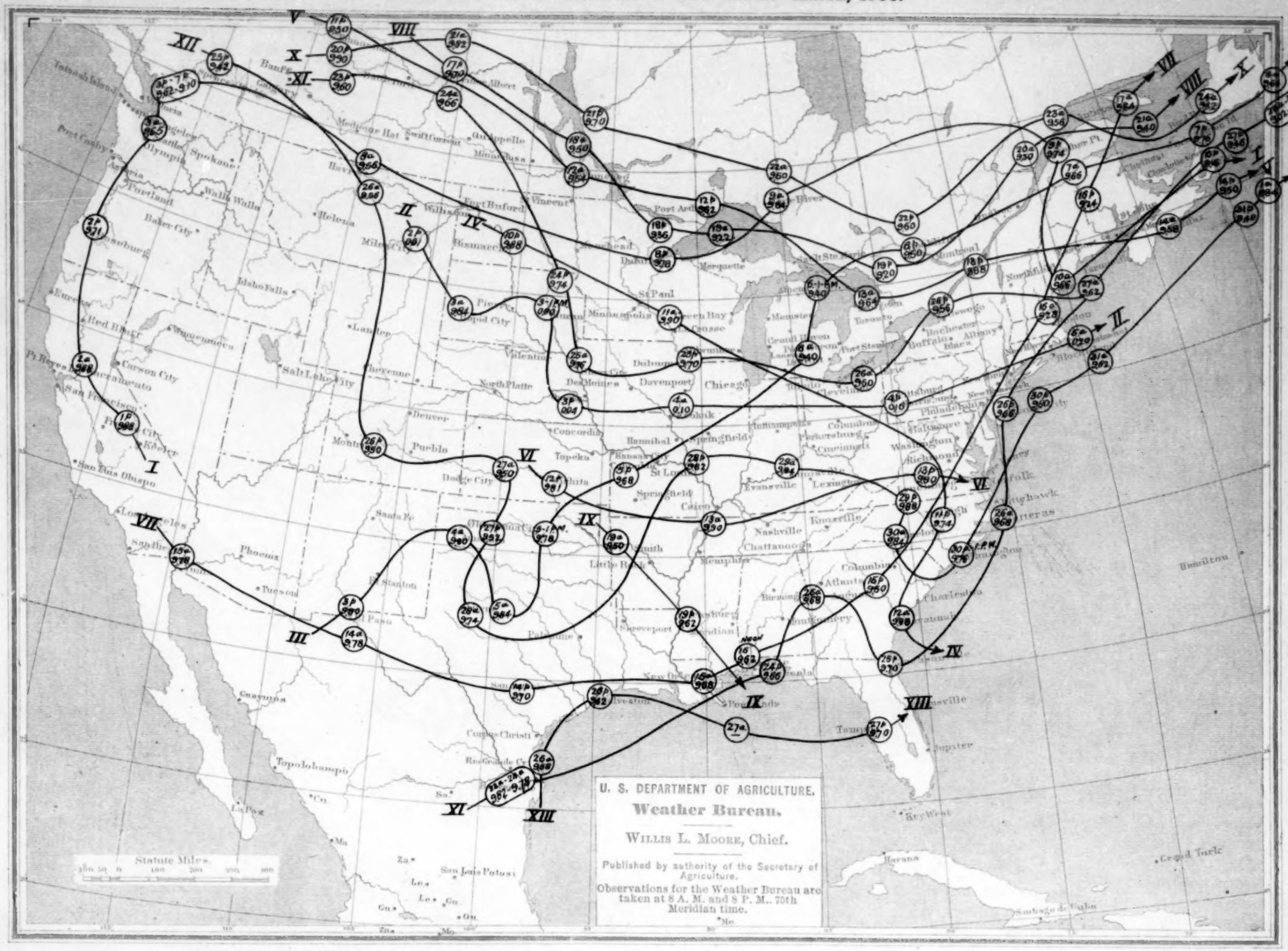

Chart III. Total Precipitation. March, 1900.

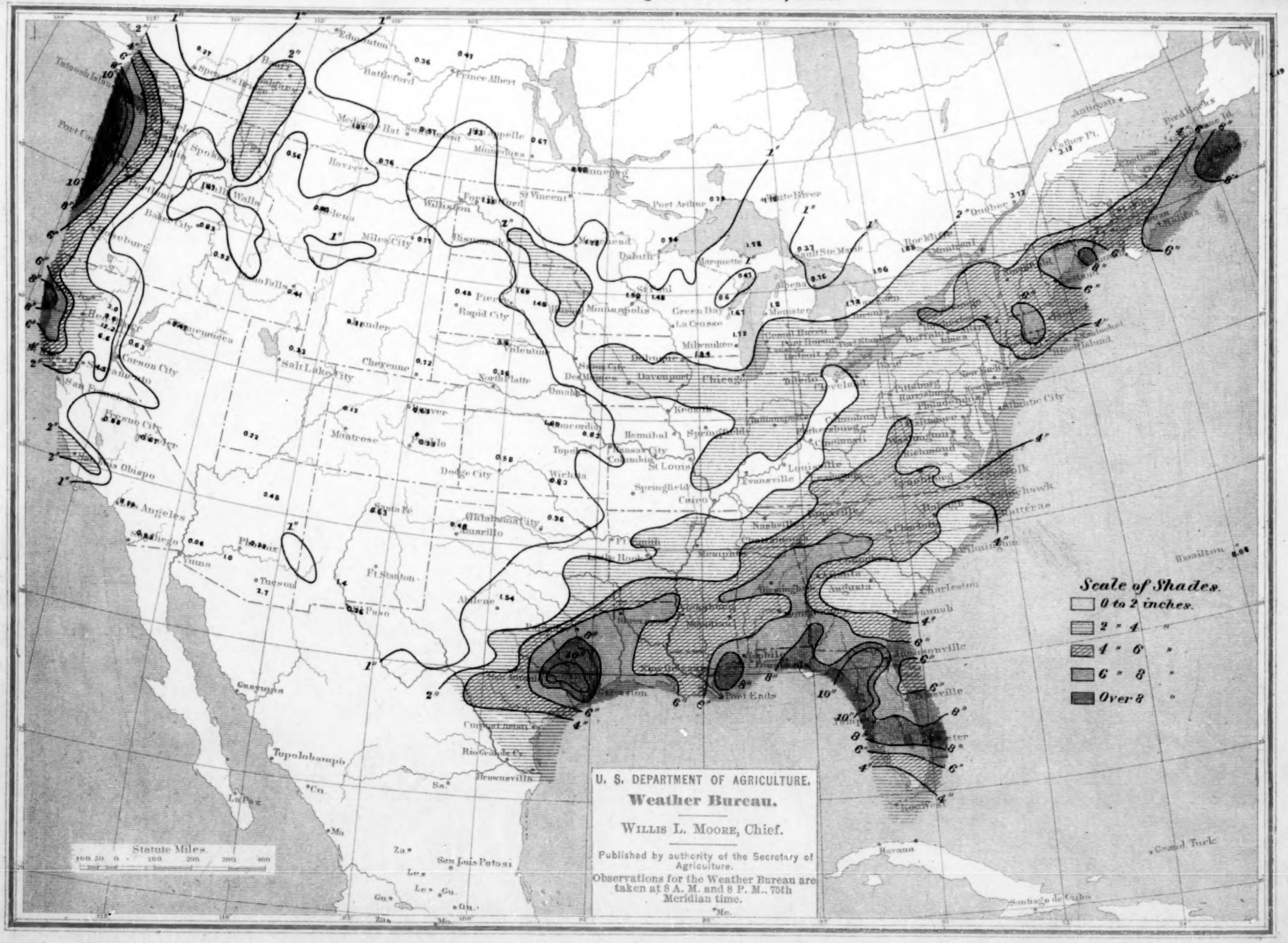
Scale of Shades.
0 to 2 inches.
2 " 4 "
4 " 6 "
6 " 8 "
Over 8 "
U. S. DEPARTMENT OF AGRICULTURE.
Weather Bureau.
WILLIS L. MOORE, Chief.
Published by authority of the Secretary of Agriculture.
Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.
Statute Miles.
100 50 0 100 200 300 400

Chart IV. Sea-Level Pressure and Temperature; Resultant Surface Winds. March, 1900.

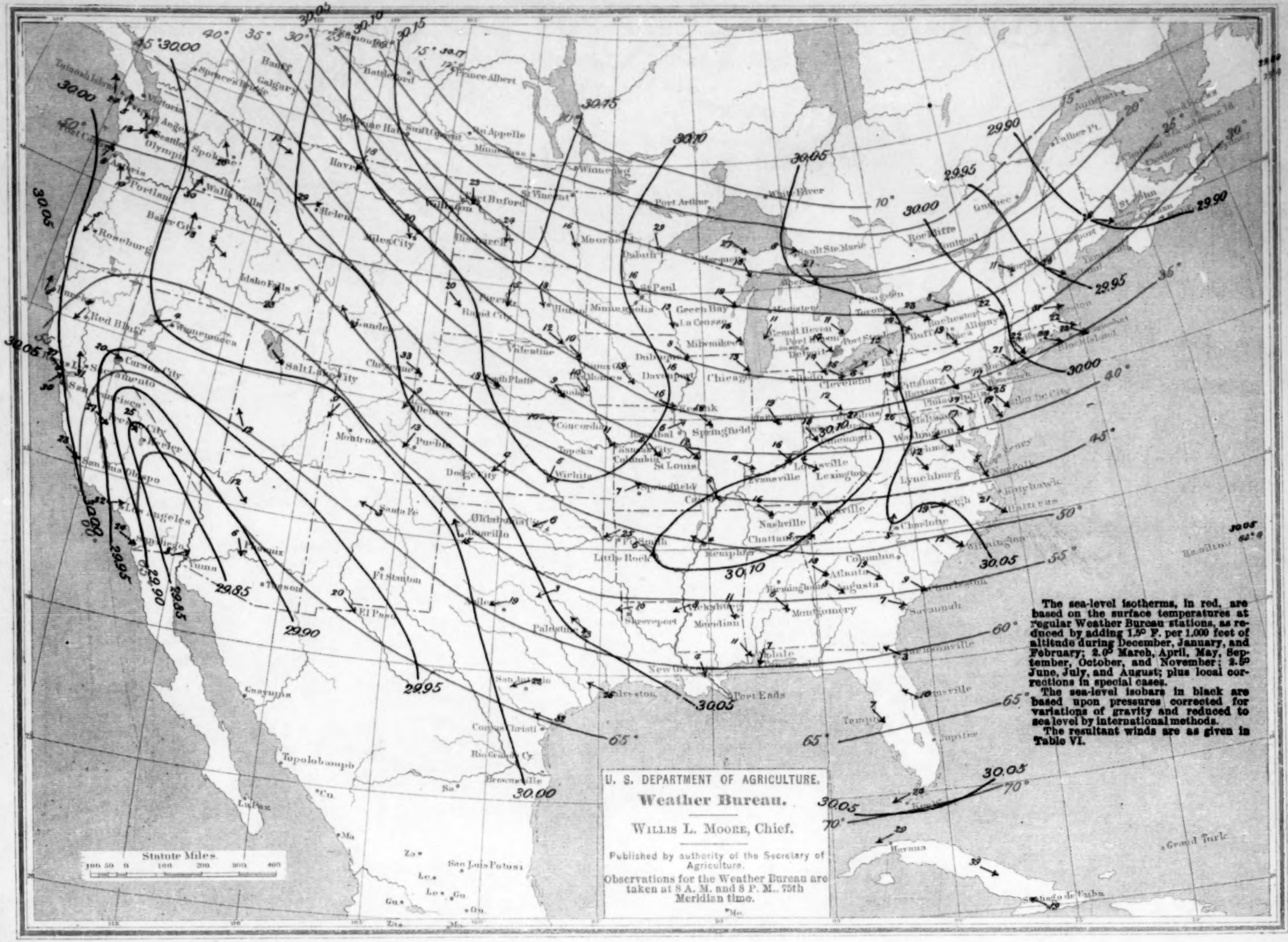
Statute Miles
100 50 0 100 200 300 400
U. S. DEPARTMENT OF AGRICULTURE.
Weather Bureau.
WILLIS L. MOORE, Chief.
Published by authority of the Secretary of Agriculture.
Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.
The sea-level isotherms, in red, are based on the surface temperatures at regular Weather Bureau stations, as reduced by adding 1.5° F. per 1,000 feet of altitude during December, January, and February; 2.0° March, April, May, September, October, and November; 2.5° June, July, and August; plus local corrections in special cases.
The sea-level isobars in black are based upon pressures corrected for variations of gravity and reduced to sea level by international methods.
The resultant winds are as given in Table VI.

Chart V. Hydrographs for Seven Principal Rivers of the United States. March, 1900.

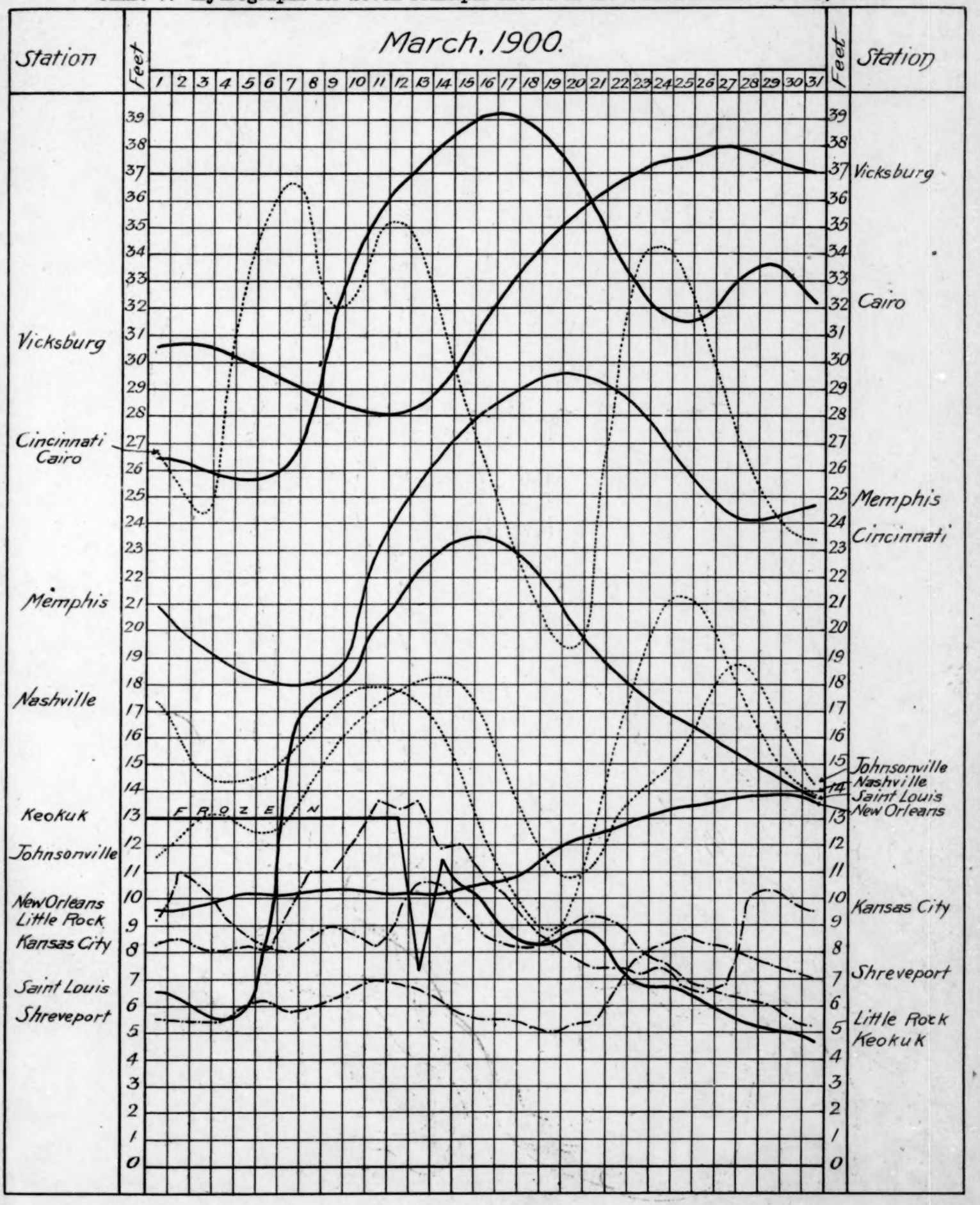

Chart VI. Surface Temperatures; Maximum, Minimum, and Mean. March, 1900.

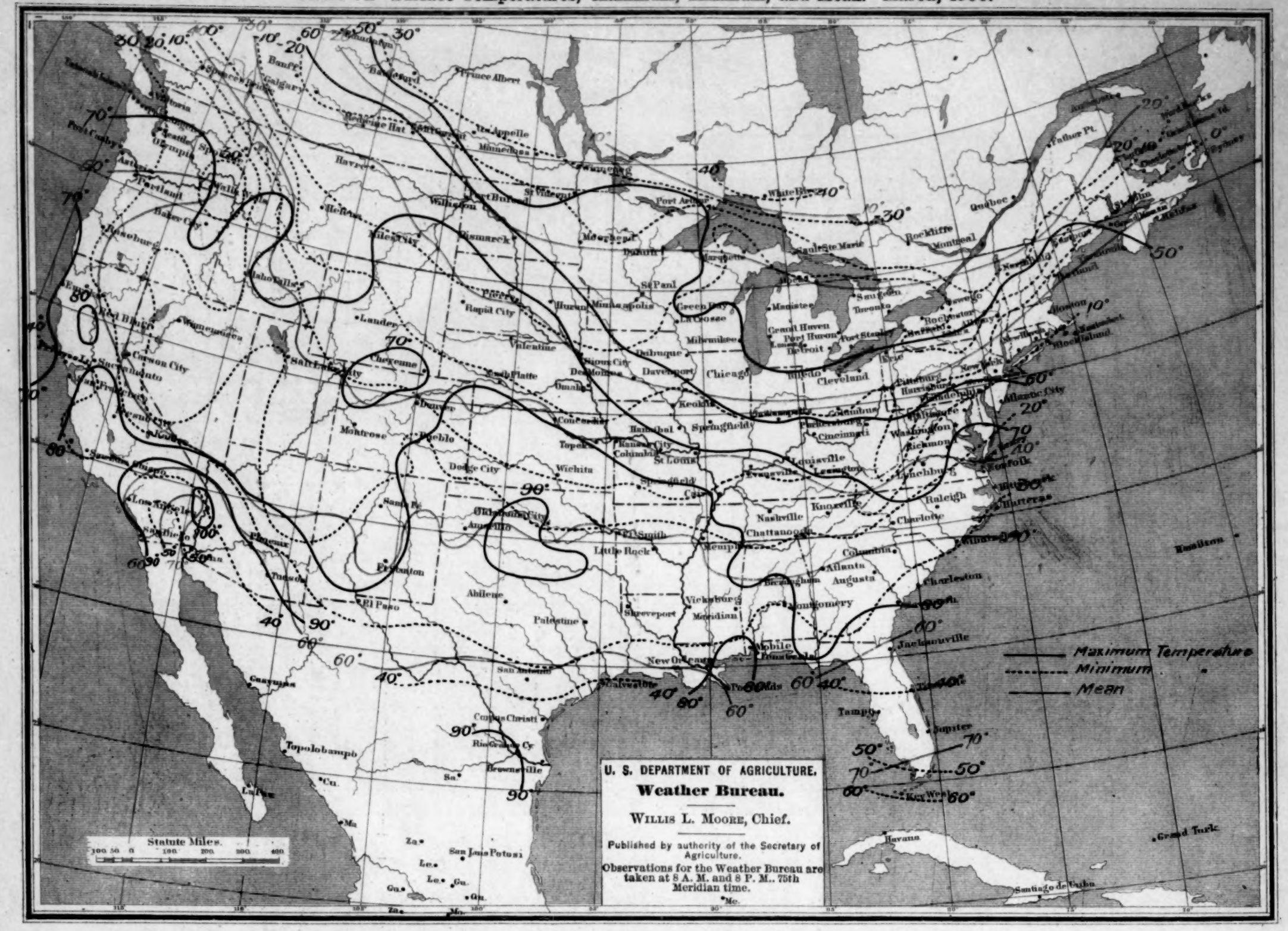
Maximum Temperature
Minimum
Mean
Statute Miles.
100 50 0 100 200 300 400
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Chart VII. Percentage of Sunshine. March, 1900.

Chart VII. Percentage of Sunshine. March, 1900.

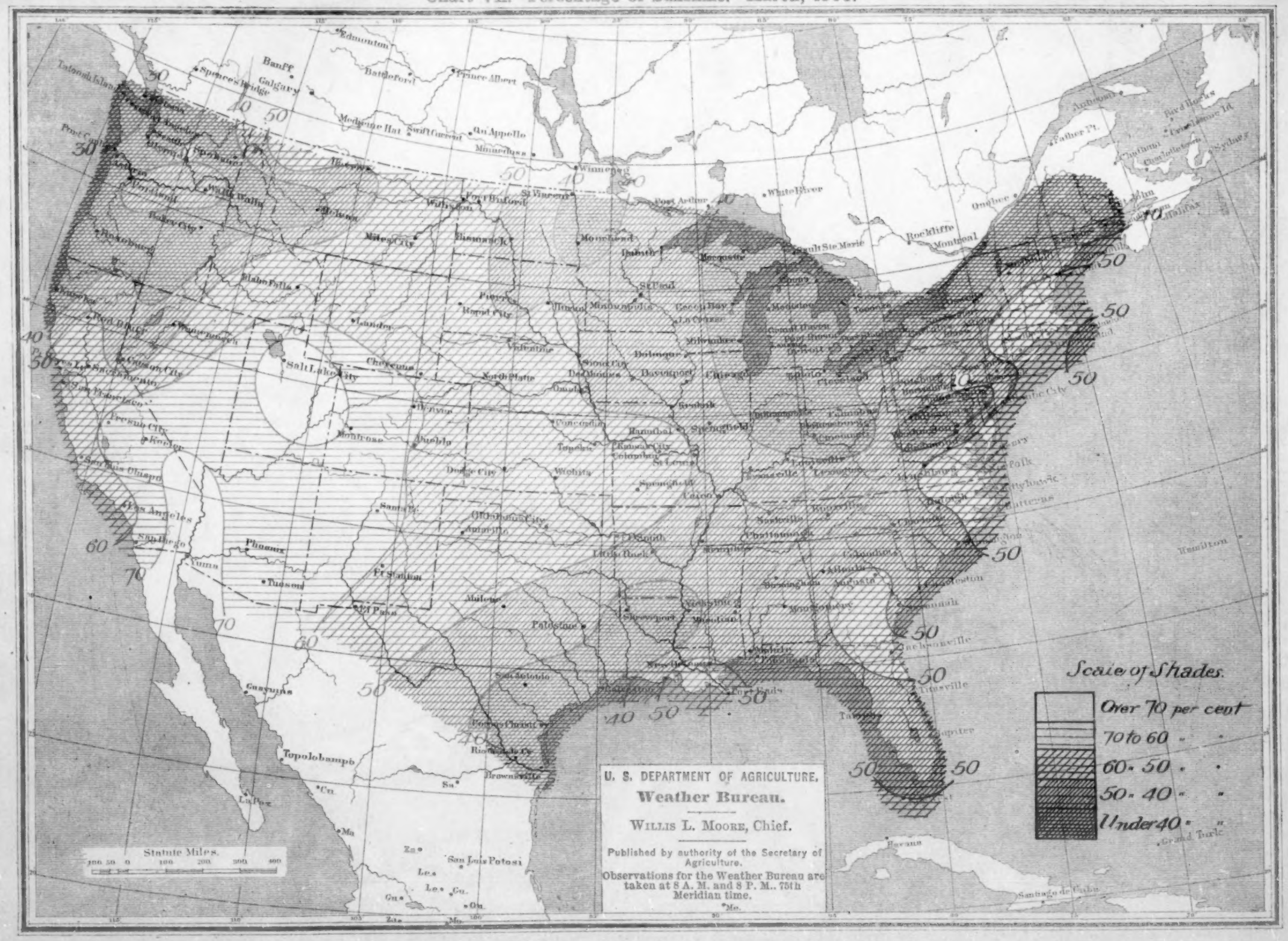

Chart VIII. Total Snowfall for March, 1900.

Chart IX. Snow on Ground on March 31, 1900.

Chart IX. Snow on Ground on March 31, 1900.

Southern limit of Snow
0"
5"
10"
20"
Statute Miles
100 50 0 100 200 300 400
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WILLIS L. MOORE, Chief.
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Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.
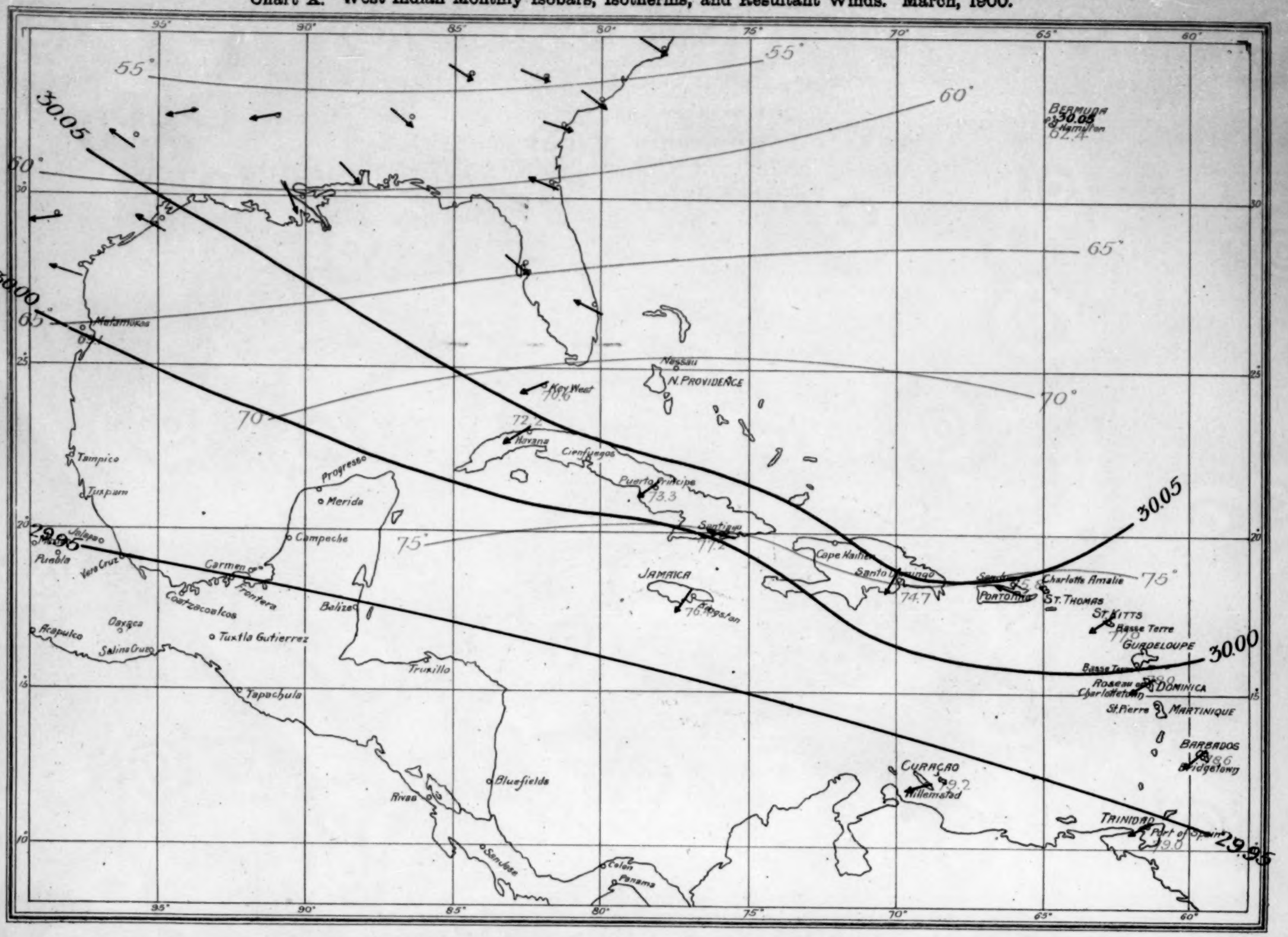
Chart X. West Indian Monthly Isobars, Isotherms, and Resultant Winds. March, 1900.